# SAVE THE CHILDREN/US

# BANGLADESH FIELD OFFICE
# CHILD SURVIVAL 8
# MIDTERM EVALUATION REPORT

## AUGUST 1994

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**Save the Children**
**54 Wilton Road**
**Westport, CT 06880**
**(203) 221-4000**

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The efforts and support of the Save the Children (USA) Home Office must also be acknowledged. Otherwise the evaluation might never have happened.

Despite the best efforts of both BFO and Home Office staff, factual errors may persist in the report. They must be considered the responsibility of the principal author who tried to grasp the complexity of the environment in a short period of time. He hopes that he has succeeded.

## Lii of Acronyms

| | |
|---|---|
| ANC | Ante Natal care |
| ARI | Acute Respiratory Infection |
| ATFPO | Assistant Thana Family Planning Officer |
| BFO | Bangladesh Field Office |
| CDC | Community Development Coordinators |
| CDD | Control of Diarrheal Diseases |
| CD0 | Community Development Organizers |
| CHO | Community Health Organizers |
| CPR | Contraceptive Prevalence Rate |
| CS Coord | Child Survival Coordinator |
| CSP | Child Survival Project |
| DIP | Detailed Implementation Plan |
| EPI | Expanded Program for Immunization |
| FHP | Family Health Promoters |
| FWA | Family Welfare Assistant |
| FWC | Family Welfare Center |
| FWV | Family Welfare Visitor |
| GP | Group Promoters |
| HA | Health Assistant |
| HIS | Health Information System |
| IAC | Impact Area Coordinator |
| IAM | Impact Area Manager |
| IEC | Information, Education, Communication |
| KPC | Knowledge, Practice and Coverage |
| LBW | Low Birthweight |
| MOH | Ministry of Health |
| NMW | Nurse Midwife |
| PMIS | Program Management Information System |
| PNC | Pre-Natal Care |
| SES | Socio-Economic Status |
| TBA | Traditional Birth Attendant |
| TOT | Training of Trainers |
| T-r | Tetanus Toxoid |
| USAID | US Agency for Tnternational Development |
| WPC | Women's Program Coordinator |
| WSG | Women's Savings Group |

## Table of Contents

## 1. Introduction and Background

The Save the Children (USA)/Bangladesh Field Office (BFO) Child Survival 8 (CS8) Project is an ambitious project aimed at expanding upon the successful model for the reduction of maternal, infant and child mortality developed and tested under a previous Child Survival 4 (CS4) project. The CS8 project seeks to promote improved health behaviors and an increase in the use of modem contraceptive methods through intensive education, motivation and counseling during one-on-one home visits by Family Health Promoters (FHPs), group education and training sessions for target groups (which include husbands and mothers-in-law) and creation and training of Women's Savings Groups (WSGs).

The project's strategy to involve the WSGs in health related activities is a particularly innovative attempt to empower those groups to move beyond their original economic scope. Since these groups were created to assist the poorest women in the area, working through them will allow CS8 to place added and specific emphasis on efforts to improve the health of this important and vulnerable segment of the population.

The CS8 project approach may be summarized to include the following key elements:

- Community mobilization and enrollment of the population;
- Formation, strengthening and utilization of WSGs;
- WSG participation in promotion of child survival and women's/adolescent girl's health;
- Partnership with the public sector for the delivery of health services and supplies;
- Partnership with the private sector for the delivery of health services; and
- Limited direct service delivery.

Through such an approach, project activities will focus on promoting improved health behaviors and/or increasing the utilization of services in the following areas **recognized** for their importance in improving child survival and reducing maternal mortality:

- immunizations for both women and children;
- case management of diarrhea;
- maternal nutrition during pregnancy;
- family planning and child spacing;

- case management of acute respiratory infections (API);
- Vitamin A Capsule (VAC) distribution;
- malaria (limited to endemic areas in Rangunia, malaria is not a significant health problem in Nasirnagar);
- maternal health, antenatal care (including iron tablets to reduce anemia) and safe deliveries; and
- exclusive breastfeeding up to 4-6 months.

The project employs an extensive information system based upon the enrollment of all families in a predetermined area to assist FHPs to identify members in their area (each FHP is responsible for approximately 350 families which he/she visits at least once a month). The FHPs then provide those persons identified as "at risk" with appropriate counseling and motivational messages in order to direct them towards needed services. The project provides for the direct delivery of only a very limited number of antenatal services. Virtually all other services are delivered by public facilities or private practitioners in the area. The project seeks to work with the providers of those services to improve their availability and quality. The lessons during the CS4 project and concerns for the long term sustainability of project activities and impact have dictated such an approach.

The information system also allows BFO staff to monitor the effects of the project on indices such as contraceptive prevalence rates, immunization coverage, maternal mortality, and infant and child mortality. The presence of this computerized Program Management Information System (PMIS) also gives the BFO the ability to conduct operations research activities within the existing framework of project activities and presents a unique resource for the development of **health** services in the area and Bangladesh in general.

## 2. Evaluation Methodology

The mid-term evaluation of Save the Children (USA)/Bangladesh Field Office's Child Survival 8 Project took place between 28 April and 14 May 1994. James C. Setzer, M.P.H., Senior Associate, Emory University School of Public Health, was designated team leader for the evaluation and principal author for the evaluation report. Members of the BFO participating in the evaluation were: Afzal Hossain, M.D., M.P.H., Senior Program Officer; Najma Khatum, M.D., Senior Medical Officer and Lisa Lanier Krift, M.A., Co-Director. Save the Children (USA) Health/Population/Nutrition Office Epidemiologist Katherine Kaye, M.D., M.P.H. also participated in the evaluation.

As guidelines for mid-term evaluations of USAID Child Survival VIII Projects had not been issued (received) at the time of the evaluation, the team followed the guidelines for Mid-Term Evaluations of USAID Child Survival VII Projects as issued by the USAID Office of Private

& Voluntary Cooperation, Bureau For Food and Humanitarian Assistance in July 1993.

During the evaluation, Setzer worked closely with members of the BFO in Dhaka to review project activities to date. An extensive review of project documentation was carried out (list of documents consulted during the evaluation is found in Appendix: 1). The mid-term evaluation team also conducted a four day field visit to several of the project sites located in the Nasirnagar Thana. This evaluation report will concentrate its discussions mainly on those areas in Nasimagar due to their relative importance in achieving project objectives (as compared to the four project villages located in Rangunia Thana). A list of the persons contacted and itinerary for the field visit during the mid-term evaluation is attached (Appendix: 2).

A draft mid-term evaluation report was submitted to the BFO and Save the Children (USA) headquarters prior to Setzer's departure from Bangladesh. Comments were received and final editing of the mid-term evaluation report took place between 17 May and 23 June 1994.

## 3. Accomplishments

The CS8 Project began in October 1992 and has, therefore, been in operation for a total of 19 months. It should be noted that for several of the project impact zones (four villages in Rangunia and a number of sites in Nasirnagar with a total population of approximately 46,000) activities carried out under CS8 represent a continuation and broadening of those begun under Save the Children (USA)'s CS4 project. For the purposes of assessing progress towards project goals it is helpful at times to distinguish between these "old" areas and the new ones where activities have been initiated under CS8. Owing to the start-up time required to organize activities and identify and train personnel etc. the program has been fully functioning in the five "new" unions for approximately twelve months. In that short period of time, impressive progress towards achieving project goals and objectives have been made in those Unions.

It is planned that an additional union in Nasimagar Thana will be included before the anticipated end of project date in 1995. The expansion of activities to this union will not be carried out using CS8 funds; instead, these activities will be funded by Save the Children agency monies, and the area maintained as a Child Survival "laboratory" site. Project related data from that union will not, therefore, be included in CS8 evaluation activities. The BFO's expansion into this union does, however, signify its strong commitment to child survival activities in Nasrrnagar m general and the effectiveness of the model in current use to bring about positive changes in the health of the population.

The documented levels of success and positive impact (i.e. significant reductions in **both** maternal and infant mortality) in the "old" project areas give the evaluation team confidence that the model chosen by the project to promote better health behaviors and practices is valid and capable of bringing about measurable reductions in indicators of mortality. It appears clear to the evaluation team that the current rate of implementation of this model in the "new"

unions will allow the BFO to achieve its objectives before the end of the project in September 1995.

The major accomplishments of the project to date are summarized in terms of CS8 Inputs, Outputs and Outcomes.

INPUTS:

The project has realized a significant and impressive number of inputs to date. It is, in some cases (i.e. household visits), not useful to estimate the total number of inputs from project data or records. While it is clear from the FHP records reviewed during the field visit that this information could be obtained, it was not deemed as an efficient use of time for the purpose of this evaluation. Important inputs delivered to date include:

- A baseline Knowledge, Practice and Coverage (KPC) survey has **been conducted.** This survey will provide current health status information as well as that required for the final evaluation of project activities.

- **All households in the project area have been enrolled** by the projects. Important demographic and socio-economic data for each household has been collected and integrated into the project's information systems.

- All households have been assigned to a FHP and **monthly visits to target household have been initiated.** These visits did not start in all unions at the same time so it is not possible to estimate the total number of visits or contacts that the project has had at the household level.

- **WSGs have been formed and both new and existing groups received health training and information** during their meetings. Each WSG meets at least once a month. The BFO estimated a total of 1143 WSG meetings between July and September **1993.** The number of WSGs in the CS8 project areas has grown since that time.

- The FHPs, Community Development Coordinators (CDCs), CHOs, and Group Promoters (GPs) have played an **instrumental role in assisting the Thana Health Administration to organize a significant number of satellite clinics and vaccination "camps".** These clinics and camps are the key **to the** Administration's Expanded Program for Immunization (EPI) service delivery strategy. Many if not all of these sessions would not have taken place without the assistance of CS8 project assistance (personnel, material and logistic). **A** total of 898 camps or sessions were organized between October 1993 and March 1994. This represents 89% of the camps which were scheduled by the Thana Health Administration for that period.

- **Project assistance (personnel, material and logistic) has been instrumental in the Thana Health Administration's Vitamin A Capsule (VAC) distribution program. VAC** distribution is carried out every six months and aimed at all children between the ages of 6 and 72 months. **CS8** has assisted the Health Administration to carry out two rounds of VAC distribution in the project area.

- **Training of Trainer (TOT) courses for CS8 interventions have been developed** for project staff. These staff have in turn trained the **FHPs** in CS8 interventions.

- A number of **educational materials for use by Community Health Organizers (CHOs), Community Development Organizers (CDOs), Group Promoters (GPs), Child Survival Coordinator, Nurse midwives (NMWs) and FHPs have been developed and tested** (with assistance from the MotherCare project), These materials will be used by CS8 personnel in all project areas.

- CS8 has printed posters for distribution to pregnant mothers (as a reminder for antenatal services).

OUTPUTS:

- **Women in the project area have completed training in:**
  - case management of diarrhea: 2604 out of 8577 (30%)
  - case management of acute respiratory infection: 1857 out of 8577 (22%).
  - **VAC** utilization: 1452 out of 8577 (17%)
  - birth spacing methods: 5453 out of 23069 (24%)

- **Men in the project area have completed training in:**
  - birth spacing methods: 1205 out of 23069 (5%)

- **Traditional Birth Attendants (TBAs) trained: 273** out of 695 in the project area (39%).

- **FHPs trained:** 112 out of 112 (100%).

- **CHOs trained: 8 trained** out of 8 (100%).

- **NMWs trained: 3** trained out of 3 (100%).

- **Child Survival Coordinator trained:** 1 out of 1 (100%).

- **WSGs established:** 251 created out of an anticipated total of 500 (50%).

- **WSGs trained: 178 trained** out of 251 created to date (70%) and 500 anticipated (36 %).

- **Village doctors trained:** 25 (an additional 160 have been identified and are scheduled to begin training during the second half of May 1994) out of 185 projected, 14 % .

- **Women 15 - 45 vaccinated with second dose of Tetanus toxoid (TT2):** 13,914 out of 24,417 (57%).

- **Children 12 -24 months fully immunized:** 2131 out of 5064 (42%).

**OUTCOMES:**

- **Vaccination Coverage:**
  Women 15-45 years TT2: 57%
  Children 12-24 months fully immunized: 42%

- **Contraceptive Prevalence Rate (CPR):**
  Fertile couples using modem contraceptive methods: 21%

- **High Potency VAC Coverage:**
  Children 6 - 72 months of age: 89% during last round of distribution (October 1993 - March 1994)

The total population covered at the time of the mid-term evaluation is an estimated 160,000, approximately 20,000 of whom live in newly registered areas where CS activities have not yet begun. For the population in areas where CS8 activities are currently fully implemented, there are 25,296 households (this represents a total of 23,069 fertile couples for family planning program purposes). There are an estimated 28,417 women between the ages of 15 and 45 years of age of whom 9,015 are mothers with children under the age of five years old. There are an estimated 5,064 children between 12 and 24 months (target group for immunization activities).

All of the households (and therefore all of the women and children) in the project areas have been enrolled in the project and receive monthly visits by their assigned FHP. Therefore, it is correct to say that the entire women and children population of the project area (i.e. 100% of potential beneficiaries) has been reached by the project's CS interventions. Those women who belong to WSGs (approx. 4,769) receive additional educational messages and information through WSG group training activities. The project also reached men and mothers-in-law through group training and educational activities.

## 4. Relevance to Child Survival Problems in Bangladesh

Poor health and nutrition status and their implications for morbidity and mortality among women and children in Bangladesh is well documented. The CS8 project has chosen to address the major causes of infant, child and maternal mortality through intensive education, counseling and motivation of at risk groups to utilize preventive services that are available. The interventions appear well chosen and feasible. CS4 data indicate that mortality rates fell in areas where these interventions were implemented. The relevance of these interventions and potential impact on child survival in the project areas is clear.

The major causes of infant (IMR estimated as 110/1000 live births in 1990) and child (estimated as 188/1000 live births in 1991) mortality as cited by UNICEF are: low birthweight/prematurity; tetanus; measles; pertussis; diarrhea; and acute respiratory infection. UNICEF estimates that 14 percent of infant mortality (deaths due to tetanus) and 17 percent of child mortality (deaths due to measles and pertussis) may be prevented by effective and timely immunization.

Diarrhea accounts for 16% of infant and 30% of child mortality. Mortality related to poor case management of infants and children with diarrhea are addressed directly through CS8 interventions. Improved case management of acute respiratory infections in infants and children is capable of having a similar impact on mortality rates. ARI accounts for 23% and 27% of infant and child mortality respectively.

Vitamin A deficiency is endemic in Bangladesh with its well documented effects on night blindness/xerophthalmia and child morbidity and mortality. Nutritional counseling of pregnant women is intended to improve their nutritional status and reduce the incidence of low birthweight (LBW) babies. Bangladesh has the highest rate of LBW in the world. The role of LBW as a cause and as a risk factor for infant mortality is well documented.

Malaria is endemic in the Rangunia area and has therefore been included in project interventions in that area alone.

The CS8 project interventions are chosen to specifically address these major causes of infant and child mortality. Additional interventions have been included which are designed to reduce maternal mortality and improve maternal health through reduced fertility.

## 5. Effectiveness

It appears that the CS8 project is well on track towards meeting its objectives. The project uses a proven model for the improvement of health and nutrition behaviors and is currently up and running in all of the areas planned. BFO staff indicated that the start-up period required for the new unions included in the CS8 project took longer than anticipated. That start-up period is over, however, and activities are occurring as planned in all unions. The entire staff of the project is aware of the ambitious objectives set by the project and the PMIS has begun

to feedback indicators of their progress. The commitment of the BFO to meet CS8 objectives is exceptional.

The overall indicators of program performance and accomplishments are given in section 3. above. Within those indicators, however, it is interesting to note the following:

- In Kunda Union indicators of program performance are much higher than the overall levels indicated above. Kunda is one of the "old" unions. In Kunda the mid-term evaluation team noted that; 84% of the children 12 -24 months were fully immunized (objective = 80%); 82% of women 15-45 years had received two tetanus toxoid vaccinations (objective = 80%); 98% of children between the ages of 6 - 72 months had received VAC on the last round of distribution (objective = 60%); the CPR among fertile couples was 33% (objective = 30 % or 10 % increase above baseline). These data indicate that given sufficient time, the CS8 strategy is capable of demonstrating high levels of use of preventive services.

- The "Program Monitoring Report" for March 1994 generated by the PMIS indicates that for 1994 for all unions (new and old): 55 % (286 out of 518) reported cases of diarrhea were managed correctly by mothers (objective = 50%); 34% (189 out of 562) cases of ARI were managed appropriately (objective = 80% of cases will seek treatment and 90% of those seeking treatment will receive appropriate care). These data suggest that the project is effectively (especially in the case of diarrhea) educating and motivating mothers to practice improved health behaviors.

- CS8 activities in Nasimagar Union began during the months of April and May of 1993. The program has been operational therefore for no more than a year. In that time, the project has trained 26 TBAs (total planed = 122) and created 41 WSGs (total planned for the union = 60). The CPR for the union is currently estimated at 27 % as compared to 12% in April 1993 at the time of the baseline KPC survey (objective = 30% or 10% increase over baseline). 95 % of the target population of children between the ages of 6 and 72 months received VAC during the last round of distribution (objective = 50%) and 71% of the children aged 12-24 months are fully immunized (objective = 80%). Clearly the CS8 team in Nasimagar Union has made significant progress towards these key objectives in just 12 months time. It would appear unlikely that these objectives will not be met (or exceeded) in this union by the end of the CS8 project.

- By producing high levels of coverage/utilization of preventive services the project is effective in reaching all so&-economic levels within the population. The use of WSGs which include only women from the lowest so&economic levels insures that the project reaches these women with additional health and nutrition messages. In Nasimagar, 62% of the women from households from the lowest socio-economic levels ("C" and "D" according to the BFO's classification) belong to WSGs. The WSGs appear, therefore, to be an effective avenue for actions aimed at this segment of the population. The project intends to develop other ways in which the WSGs can be used

to improve the health status of their members. If feasible ways can be found, then the project will be assured of reaching the most vulnerable segments of the population.

It appears that the implementation of the CS8 project is proceeding in a steady and effective manner. Indicators of progress suggest that the project will meet objectives by the end of project activities in September 1995. The PMIS employed by the project will allow the BFO to track progress towards CS8 objectives. The BFO has the capacity to conduct the required end-of-project K&P survey and perform the appropriate analyses. In addition, the PMIS will permit the BFO to document changes in impact indicators such as infant, child and maternal mortality rates for the population covered by the project

## 6. Relevance to Development in Bangladesh

The relationship between CS8 child survival activities and the development goals and objectives of both Save the Children (USA) and the Government of Bangladesh is clear. The CS8 project attempts to improve the utilization of preventive services in order to improve the survival of the children in the project area. The project has demonstrated a decline in infant, child and maternal mortality rates in areas where CS8 interventions have been implemented. The impact of improved health and reduced mortality on the human potential of the target population is clear.

The CS8 project attempts to link its health promotion strategy to the development of women's credit groups. This linkage is apparently unique among projects in Bangladesh. This strategy allows the project to insure that it is reaching the women with the lowest incomes since these are the members of the WSGs. The PMIS will allow the project to evaluate whether observed reductions in mortality rates are different for WSG members than the population as a whole. These results might prove important to the BFO as well as the Government of Bangladesh in developing ways to target the most disadvantaged segments of the population. This is, of course, in keeping with both Government of Bangladesh and Save the Children (USA) policies.

By working with the Thana level health office the CS8 project also seeks to strengthen the health service delivery system in the Thana. The delivery of health services is a clear priority within the development strategy developed by the Government of Bangladesh. The mid-term evaluation has recommended that these linkages be strengthened and expanded.

## 7. Design and Implementation

### 7.1 Design

It is important to note that the design of CS8 project activities is based upon the successful model for child survival activities developed by Save the Children (USA) in Bangladesh under the CS4 project. This model has been proven to be capable and effective in achieving high

levels of coverage and utilization of child survival services. The project has been able to sustain (with external funding support) those high levels through the course of CS4 and the first half of CS8. In addition, the model has been able to document a reduction in maternal, infant and child mortality in those areas in which it was implemented under CS4. Given this impressive track record (for both the model and Save the Children (USA)), there is little doubt in the minds of the evaluation team that the CS8 project will achieve its objectives within the specified project time frame.

The project has defined its impact area as seven unions in the Nasimagar Thana (Kunda, Gorkama, Nasirnagar, Bholakat, Buriswar, Fandauk and Purbabagh) and four villages in Rangunia Thana. Through its strategy of household enrollment it is able to accurately estimate the total population covered as well as key subpopulations (women, children, fertile couples). This allows the BFO to set clear, quantifiable goals and objectives for the project. The goals and objectives set by the CS8 project appear quite ambitious. They might be considered impractical if they were not based upon the expansion of existing, proven methods for achieving such ambitious goals within the Bangladeshi context. The goals and objectives are clearly presented in the original grant proposal and were modified slightly at the time that the detailed implementation plan (DIP) was submitted. The reasons for these modifications are well documented in the year one annual report.

The impressive health and management information system employed by the project (see discussion below) will allow the project to evaluate project success in attaining goals and objectives. Indeed, the BFO staff are well attuned to the need to track project performance very closely and to link project management decisions to the data collected.

### 7.2 Management and Use of Data

The project employs an impressive information system for monitoring and evaluation purposes. The key elements of the Program Management Information System (PMIS) were created by the BFO for use under the CS project. Its use has been continued under the current project. It is essential to the CS8 strategy of identification of at risk or at need individuals for targeted counseling and motivation. It appears to provide all levels of the project (from FHPs to BFO and Save the Children (USA) home office) with information needed to effectively manage the project as well as document changes in important indicators of project impact. Its ability to permit the calculation of maternal, infant and child mortality rates for the populations in the project impact areas is an important asset and may be unique among non-research directed projects in Bangladesh.

The system is based upon the enrollment of all households in the community and their inclusion into the project data base. The FHPs use basic family information and specific information concerning maternal and child health to identify individuals in need of services. The system allows the FHP to target her/his monthly home visits with the families which she covers (approximately 350). The FHPs keep the following **manual** registers in order to target community members for delivery of appropriate services:

- children under the age of two for EPI targeting;
- children under the age of six for VAC distribution targeting;
- fertile couples for family planning counseling and targeting;
- women between the ages of 15 and 45 for tetanus immunization targeting;
- pregnant women for antenatal services, counseling and possible referral;
- training activities targeted at community members; and
- training activities targeted at WSGs.

In addition, the FHPs maintain records on all births, deaths, pregnancies, and migration within the community. This system of manual registers, while time consuming and at first glance cumbersome appears to work quite well. The FHPs update the registers on a regular basis and use them extensively in their daily work. Procedures are in place to regularly check on the accuracy of the data contained in the registers.

The mid-term evaluation team saw clear examples of the registers in use at several different vaccination camps and satellite clinics that it attended. The FHPs (working alongside government family planning and health workers) used the registers to monitor the number of women and children who had been vaccinated that day. This was tracked against the total number of individuals in the area who had been identified as requiring vaccinations. The FHPs actively pursued those individuals who had not come to be vaccinated.

It was noted that information available through government sources did not always agree with that generated by the. FHPs using their registers. It was generally acknowledged that the FHP's information was more accurate and complete and that government workers did not have the time necessary to maintain an accurate information system. FHPs track 350 families each while government health personnel are expected to track between 800 to 1200 families. The quality of the information system that they maintain suffers accordingly.

The Thana Health Administrator acknowledged the differences between the two information systems. He is bound to the use of the government system for reporting purposes. Nonetheless, government health personnel were beginning to use FHP data to calculate the required number of vaccine dosages when planning vaccination camps. A number of instances were cited where vaccinators, using government data, had brought insufficient stocks of vaccine to remote sites. This resulted in a number of "missed opportunities". The sharing of data for planning purposes is encouraging.

It may be possible to streamline the manual registers somewhat. This should not be considered a priority during the remainder of CS8 as the system is functioning effectively at this time.

The FHPs appear to appreciate the registers and indicate that they help them organize their thoughts and activities around the concrete goals and objectives of the CS8 project.

At the union level, data from the registers are aggregated and compiled monthly. A report is sent to the BFO. In February 1994 the BFO began computerizing these reports and has developed a number of software routines to analyze these data and provide summary statistics and program performance indicators for the CS8 project area(s). The results are presented by union. This is an important step in providing project managers with needed information in a timely manner. CS8 personnel in the field had received copies of the most recent report (March 1994) generated by the system. They were aware of the results that it contained and had shared these results with Thana level health officials. Community leaders in Kunda indicated that they had not received any feedback from the project concerning progress towards goals and objectives. Field staff should organize periodic sessions to share relevant project information and results with the community.

A more extensive data reporting and analysis system using sentinel sites is also under development. The sentinel sites chosen are based upon a subsample of FHPs and the families they cover and represent a population of approximately 30,000. This number was chosen so as to be sufficiently large as to permit the calculation of mortality rates within acceptable confidence limits. All household and register data from families living in the sentinel sites have been entered into computers at the BFO. These data will be updated quarterly using information from the registers in the field.

Under CS4 data from all registered families were entered into the system. This has proven unwieldy and expensive. The difficulties encountered manipulating these data files inhibited their regular use. The decision to adopt the sentinel approach appears to be a positive step towards streamlining this system while still providing important information that is representative of the entire project area. The ability to estimate impact through the calculation of women, infant and child mortality rates in the project area over time has not been sacrificed. The data files are structured so as to be compatible with those created using the previous total population data base.

The original sample of FHPs for inclusion as sentinel sites was performed in a manner that did not produce a statistically random sample of FHPs. Such a sample would not have produced results which were truly representative of the total project population. A second, statistically random sample has been chosen to insure the representativeness of the PMIS results. This sample was selected by assigning a random number to each Family Health Promoter (FHP) in the entire project area (using FoxPro) and then randomly selecting 17 out of the total 104 RFPs. The areas covered by these 17 FHPs became sentinel points. This number (17) was selected because, as each FHP serves a population of about 2000, all sentinel areas together would yield a population of about 30,000. A total sentinel population of 30,000 will ensure project representatives and statistical validity.

The BFO appears fully capable of and committed to the upkeep and operation of both manual and computerized data systems. They are an important resource to the health sector in

Bangladesh. They should be supported under the remainder of CS8 funding and the BFO should explore possibilities to support the ongoing collection and analysis of these data even after the termination of CS8 support.

## 7.3 Community Education and Social Promotion

The CS8 project strategy is based almost completely on the idea of education of mothers and families to improve health behaviors and utilize preventive services. Except for a limited number of antenatal check-ups for pregnant women and ARI treatment, the project does not directly deliver any health services (curative or preventive). The decision to eliminate direct service delivery comes from BFO concern over the long term sustainability of direct service delivery activities. Instead the BFO has chosen to work with and through public (through the Health and Family Planning Departments at the Thana and union level) and private (through village "doctors" who dispense medications and practice medicine in virtually all villages in the project area) sector service providers.

Using the rosters maintained by the FHPs, the project identifies individuals for targeted IEC activities. Many of these activities are carried out either during monthly home visits or as part of vaccination camps and other opportunities. Educational and motivational messages are also passed to members of WSGs. Men (fathers) and mothers in law are also targeted for relevant and complementary IEC activities.

The messages and materials for education and motivation used by the project were developed and tested in collaboration with the MotherCare project. The results of the evaluation of these materials were very positive. Given those results, their use on the wider scale of the entire project area seems appropriate. The Mother&e final evaluation report contains the details of the development and testing of messages and materials.

## 7.4 Human Resources for Child Survival

The project supports the salaries of the following full time personnel:

- 1 Senior Medical officer (Dhaka);
- 1 Child Survival coordinator (Nasimagar);
- 8 Community Health Organizers (Union);
- 3 Nurse Mid-Wives (Field);
- 1 Assistant Program (Monitoring) Officer (Dhaka);

- 1 Child Survival Project Manager (Dhaka); and
- 1 Computer Operator (Dhaka).

The project also partially supports **(50%)** the salaries of the following personnel:

- 24 Community Development Organizers (Field); and
- 1 Data Manager (Dhaka).

There are currently 112 **FHPs** and 48 GPs working with the project. These individuals are paid a modest (1250 taka or approximately $31.25 per month) stipend through the CS8 project. An additional Taka 250 (sustainability allowance) is set aside monthly for each promoter to be released at the end of the grant for establishing long-term income generation activities. Promoters will be encouraged to continue their health related activities after the end of the grant with family income support from the sustainability projects. BFO staff have taken great care to emphasize that the stipend and sustainability allowance do not imply full time employment by the BFO or Save the Children **(USA).** The distinction is not entirely semantical. The BFO has decided against formally hiring these individuals in order to avoid the pitfall of creating a large project dependent employee base that cannot be sustained.

They have also repeatedly indicated that stipends wme directly from CS8 project funding and will end with the temtination of CS8 in 1995. The lack of a permanent employer-employee relationship is a cause for some wncem among **FHPs.** This was voiced during a group meeting with **FHPs** in the Kunda Union.

The **FHPs** training and activities are not linked to a single intervention. They educate and motivate families about all of the areas of CS8 interventions. Initial FHP training is 21 days. This is supplemented through occasional refresher training and supervision. CS8 project supervision is formative in nature and considered as a training activity rather than a control or inspection of performance. Supervisory checklists are utilized by the CDCs to provide regular feedback on performance to **FHPs** and **CHOs.**

## 7.5 Supplies and Materials for Local Staff

**CS8** project strategy and implementation plans do not rely heavily on the provision of material assistance or other **supplies** in support of child survival activities.

The project has developed a number of useful materials for use by **FHPs** and other project personnel. Booklets, leaflets, flip charts and posters are the key educational and counseling materials which have been developed for use by the project. These were developed and their effectiveness tested in collaboration with the MotherCare project. A detailed description of the methods used to develop and test these materials is found in the MotherCare Final Evaluation Report.

The educational/promotional materials developed and distributed to FHPs and others appear to be widely and effectively used. They were in evidence at all of the vaccination camps and satellite clinics visited. Workers used them in one on one discussions with the mothers attending those sessions.

The materials developed in support of the project information system appear adequate. The manual registers are used extensively and regularly by the FHPs and others. Some streamlining of these registers may be possible. This should not be considered a high priority.

The project provides occasional, ad hoc, material assistance to government health personnel in support of vaccination, VAC distribution and other coordinated activities. The importance of this assistance to achieving high levels of program coverage is acknowledged by the Thana Health Administrator. He has requested that the project provide the Thana Hospital with a generator. There is a very real need for a generator given the frequent, extended power failures in Nasimagar. Power failures have hampered EPI program activities in several instances. The provision of a generator to the Thana health office may also serve to strengthen the ties between that office and the project staff and its activities.

A limited number of supplies (umbrellas, shoulder bags, etc.) have been furnished to FHPs and GPs in the field.

## 7.6 Quality

Project personnel at all levels display an admirable level of commitment to the project and its goals and objectives. This commitment appears to be widely translated into hard work. Supervisory systems have been put into place (see description below) to further guarantee the performance of the FHPs and other project personnel.

Training of almost all project personnel has been completed. The personnel contacted during the field visit appeared capable of performing their required activities. Indicators of project performance suggest that their skills are adequate and appropriate. The project should encourage continuing efforts at skill improvement and enhancement.

The noticeable lack of commitment and accountability on the part of government personnel collaborating with the project is unfortunate. This is, sadly, beyond the swpe of the CS8 project and even Upazila Health Administration to resolve completely. The project is attempting to support those workers and provide lacking supervision as a means to improve the quality of their performance.

## 7.7 Supervision and Monitoring

The CS8 project has developed and utilizes a number of tools for the supervision of project

activities. Supervision and monitoring of activities appears adequate to insure quality and meet project objectives. A strong commitment to quality and meeting CS8 objectives is evident. Supervision is seen as a formative activity for project personnel rather than an inspection or control exercise. Supervisory visits become on the job training. This spirit and approach are to be encouraged.

Personnel in the field were clearly at ease in dealing with Dhaka level staff. All appeared receptive to dialogue and collaboration directed towards improving project performance and results. The manual and computerized components of the PMIS are used effectively to monitor progress as well as provide the basis for supervisory activities. Staff from the Dhaka office spend significant amounts of time in the project areas despite difficult travel conditions.

The following mechanisms are indicative of BFO efforts to promote effective planning, supervision and monitoring of project activities:

- FHPs prepare weekly **action plans. These** plans are used daily by the FHPs to plan and monitor activities and are periodically reviewed by project staff as part of supervisory activities.

- All levels establish **monthly targets** which are reviewed for achievement and provide the basis for formative supervision.

- All personnel are subject to **bimonthly spot checks** of their activities and performance.

- The project carries out an active program of **inservice training and followup.**

- The project uses **lot quality assurance (LQA) methods** on a yearly basis to verify the accuracy of data collected and used by the PMIS.

- The PMIS now produces a **"Monthly Performance Report"** which is used to monitor activities and provide feedback to the field.

- The BFO prepares **quarterly and semi-annual reports** of project activities.

### 7.8 Use of Central Funding

Technical support provided by the Save the Children (USA) headquarters health unit to the BFO CS8 project has been effective and appropriately timed. Central support has been useful and has met field staff needs both in assistance on the technical aspects of the project and in the completion of required USAID documents. Specific centrally-funded support visits in this regard:

- Dr. Loren Galvao (February 1993): Technical assistance and support to the

BFO CS8 baseline K&P survey.

- Dr. Ketherine Kaye (March 1993): Assistance in development of the CS8 DIP and technical assistance to the CS8 field testing of the MotherCare interventions.

- Karen LeBan (May 1993): Administrative and program monitoring and support (trip in conjunction with SC/US Asia/Pacific Regional Health Workshop in Nepal).

- Dr. Katherine Kaye (October 1993): Technical assistance/ mid-term review of CS8 field testing of the Mother-Care interventions; assistance to CS8 annual report and year two action plan.

- Karen LeBan (November 1993): Monitoring and support (trip in conjunction with the 3rd Asia/Pacific Regional PVO Child Survival Workshop hosted by the BFO in coordination with the Johns Hopkins University Child Survival Support Project.).

Given the rigorous nature and review of required USAID plans and reports, the BFO has found the central support in completing these extremely helpful in ensuring that they meet expectations.

In addition to on-site support, the BFO staff indicate that the SC/US headquarters health unit has provided necessary and helpful administrative assistance and technical backstopping at the headquarters to field level. This support is provided both in response to requests from the field for information and facilitation of administrative issues as well as in pro-active forwarding of technical and administrative information of relevance.

As understood by BFO management, the CS8 central funding granted to the SC/US headquarters is intended for the provision of technical assistance and support to four SC/US CS8 country grants and its use is not necessarily apportioned on a per country basis. It is not within the scope of this evaluation to determine if the central funding is sufficient to cover the technical assistance and support needs of all four country grants; however, based on the opinions of the BFO staff, these funds clearly serve a critical function in providing technical support for meeting both grant objectives and USAID obligations. The BFO staff express that their needs have been effectively met in this regard.

## 7.9 PVO's Use of Technical Support

The CS8 project has made limited but effective use of external technical support in a number of areas. It should be noted that the original project design was not heavily dependent upon external technical assistance and therefore limited resources for technical assistance and support were included in the CS8 budget. All (with the exception of a consultant hired for the mid-term evaluation) of the external support provided to the project to date has been financed

from non-CS8 funding sources.

The table below summarizes the external technical support which has been utilized by the CS8 project to date:

**Table: External Technical Assistance to CS8 Project (October 1992 - May 1954)**

| Consultant | Description of Activities | output |
|---|---|---|
| Kim Winnard (Nov 92) | maternal nutrition and IBC strategy development | IEC materials developed |
| Gita Pillai (Dec 92) | revision of HJS indicators of socio-economic status | revised HIS |
| Dr. Loren Galvao David Newberry (Feb 93) | CS8 baseline K-P survey | survey completed |
| Dr. Katherine Kaye (March 93) | assistance to development of CS8 DIP and assistance to CS8 MotherCare interventions | DIP submitted and approved |
| Karen LeBan (May 93) | support to implementation of CS8 activities | activities initiated |
| Dr. Nirmala Murthy (July 93) | design of sentinel system for CS8 monitoring and evaluation | sentinel system developed |
| Dr. Katherine Kaye (Ott 93) | assistance to CS8 MotherCare interventions, assistance to CS8 annual report and development of action plan for year two | annual report and year two action plan submitted |
| Karen LeBan (Nov 93) | support to CS8 project implementation | activities initiated in "new" areas |
| Estela Novell (Nov 93) | development of curriculum for FHP enrichment program | curriculum for enrichment program finalized |
| Estela Novell (March 94) | development of curriculum for WSGs | WSG curriculum finalized |
| James Setzer (May 94) | Team leader of CS8 Mid-term evaluation | evaluation report submitted |

**BFO staff felt that project implementation had benefited from the external technical support cited above. The lack of a narrative report from one external consultant made it difficult for the evaluation team to judge the technical quality of some of the consultant's recommendations. The BFO should require a written reports from all external consultants and technical assistants. It would appear, however, that the technical support made available to the project has generally been of good quality and structured to be in direct support of the attainment of project objectives.**

## 7.10 Assessment of Counterpart Relationships

The project has taken care and effort to develop collaborative working counterpart relationships with government health officials at appropriate levels in the field. Field staff at the Union and Thana levels are well placed to interact with health and family planning officials

at those levels and do see on a regular basis. It must be noted that health and family planning come under different vertically structured wings of the same ministry, greatly complicating attempts to coordinate project activities with government institutions which should but often do not collaborate amongst themselves.

All indications are that this relationship is working very well. Bimonthly coordination and problem solving **meetings** have been initiated at the request of Thana level officials. There is abundant sharing of data and resources and a strong sense of team commitment to achieving common goals and objectives. The Thana Health Administrator was recently cited for having the highest levels of immunization coverage of the seven thanas in the Brahminbaria District. He readily attributes this to CS8 assistance in organizing EPI activities and identifying and motivating the appropriate target populations to utilize services. Government resources alone appear woefully inadequate. The mid-term evaluation team witnessed a number of jointly organized (and well attended) immunization camps and satellite clinics.

The BFO has received several unsolicited letters of support and thanks from Thana level officials. These officials have recently requested Save the Children (USA)'s technical assistance in the development of a "model village" in the Nasimagar Union. This request to collaborate effectively on activities beyond the original plan of CS8 is indicative of the current quality of counterpart relations and is to be encouraged and nurtured.

Despite reasonable efforts and a willingness to collaborate, the project staff in Dhaka appear to have little regular contact with central-level government health officials. This is a problem inherent with most, if not all, PVO supported health projects operating in Bangladesh. This lack of articulation between the field/implementation levels of activities and the central decision and policy making level is unfortunate. The implications for wider replication of project successes and effective information exchange are clear.

### 7.11 Referral Relationship

The availability, quality and demand for referral services in the project impact area is an object of ongoing concern to BFO staff. The BFO chose to terminate direct service delivery at the end of CS4. The CS4 final evaluation demonstrated increases in maternal, infant and child mortality during the last year of the project (after a series of annual declines) coincidental to the termination of direct service delivery by Save the Children (USA)/BFO in the project area. It is not possible to directly attribute those increases to the termination of direct service delivery activities in the project area (data analyzed by the ICDDR,B apparently demonstrated a similar trend during the same time period).

It is recognized that Nasimagar is one of the poorest areas of the country. Government and PVO operated health facilities are lacking. The government facilities which are found in the area are often closed (reason(s) unknown) and of generally poor quality.

The situation described above is further compounded by several other factors documented in the MotherCare KPC final evaluation. The evaluation report indicates that women cited financial barriers to their utilization of referral services. The report also shows that, while there was an increase in care-seeking for problems occurring during delivery, many pregnant women tend to minimize the severity of problems occurring in pregnancy and did not seek curative care. The project must attempt to address these two issues before end of project in 1995.

## 7.12 PVO/NGO Networking

The BFO does not work directly with any other members of the PVO/ NGO community in Bangladesh on the specifically health-related components of this project. The project impact site in Nasirnagar was chosen specifically due to the lack of other PVO/NGO players in the area. This has meant that the area is acutely under served. Therefore, little networking with other PVO/NGOs in the field is possible or likely in the near future.

The BFO does regularly work and communicate with a number of other members of the PVO/NGO community on other health related projects and in other sectors. Information exchange and sharing appears to take place on a frequent basis. During the evaluation period the BFO organized a debriefing for other PVO/NGOs on the results of the just completed evaluation of the MotherCare Project as well as the results of the analysis of nutritional data collected through the PMIS. It was clear that the participants at that debriefing appreciated the exchange of information that took place. The BFO actively seeks to partner with other (often indigenous) PVO/NGOs in the development of new activities and initiatives in health and other sectors.

The evaluation team recognizes the importance of sharing of information and results within the PVO/NGO community and encourages the BFO to pursue all opportunities available to do so.

## 7.13 Budget Management

Based on the annual project audits required by the Government of Bangladesh, project funds are clearly and responsibly managed at the central level in Dhaka. The BFO was also included in the SC/US agency A-133 audit for the fiscal year 1992 with very favorable results and no major findings. The accounting and financial management systems in place in the field appear complete and carefully maintained. Internal audit mechanisms are in place and respected. Systems appear quite capable of providing the necessary information to the Impact Area Manager and project staff in Dhaka to permit realistic budgeting and financial management.

Analysis of project financial data by BFO staff indicates that the rate of expenditure of project funds to date is less than anticipated in the original grant proposal budget. This is apparently due to two main factors:

i) a longer than anticipated time frame for completing the administrative and organizational processes related to expansion of project activities into the "new" unions in Nasimagar; and

ii) lower than anticipated implementation costs.

It should be noted that this under-spending has not kept the BFO from making significant progress towards the achievement of CS8 goals and objectives. Recommendations for utilization of the anticipated balance of funds prior to the termination of project activities in 1995 are included in Section 10 of this report.

## 8. Sustainability

Discussions of project sustainability should necessarily be broken down into separate discussions of the sustainability of activities and the sustainability In addition to such a breakdown, the concept of sustainability should not be limited to financial considerations but must include human, technical, political and social aspects of project activities and impact as well.

Discussions of the financial sustainability of project activities need not be construed to mean financial self sufficiency in the short term. External funding sources must recognize the economic realities faced by communities in attempting to contribute to the financing of their health care. Many developing world communities cannot be expected to contribute all recurrent costs of the operation of their health systems (although a number of African examples indicate that they may be capable of contributing a high percentage of their non-personnel recurrent costs; an encouraging example indeed).

Ongoing discussions of financial sustainability should focus on defining an appropriate and feasible partnership between government, donors and the community to finance adequate health services. This partnership must rest upon a clear understanding of the capacity of each to contribute and its commitment to sustain that contribution. It is not clear at this time as to what the appropriate contribution of each of these partners must be in the project area to insure the continuity of activities that has been so successful in reducing mortality rates. Role definition for all partners is extremely important if project activities and impact are to be sustained, Discussions in this area should be seen in the context of larger strategies aimed at the empowerment or me community.

Given the difficulty that this project has experienced in defining a strategy capable of recovering a significant percentage of its recurrent costs (see discussion below), the continuation of most, if not all, project activities beyond the scheduled termination of CS8 funding (September 1995) would appear unlikely at this time. This is not surprising for a project based upon a strategy of labor intensive activities such as home visits and one-on-one counseling for health promotion. Greater emphasis must be placed on this issue by the BFO.

The BFO must undertake actions to better understand the potential contributions of each of the project partners before the termination of CS8 project support. It should attempt to gain greater insight into the potential financial contribution of the community. This potential contribution, while not sufficient to permit total financial self sufficiency may be more than is generally believed possible based on current subjective and anecdotal assessments.

These activities should be seen as an important follow on to information obtained during the CS4 final survey which looked briefly at current household expenditures for health services. That survey demonstrated that current levels of expenditure for health services (which measure some combined function of both willingness and ability to pay for services) among those families which spent on health care during the previous two week period was 210 Taka. The assessment of the communities ability to contribute financially to project recurrent costs is a complicated (but not unfeasible) undertaking. It should be noted that activities in this area may require more time than remains in the original project time frame (16 months) and therefore necessitate an extension of project life and activities.

In certain instances it may be feasible to attempt to insure the sustainability of project activities through capacity building of local institutions. These institutions (in many cases the Ministry of Health) then continue to carry out project activities after the termination of financial support. Even this strategy is vulnerable when faced with significant recurrent cost gaps on the part of the local institution. This would appear to be the case with regard toCS8 - Ministry of Health partnering activities (EPI, VAC distribution, distribution of contraceptives) .

The project enjoys a positive working relationship with the Thana level Health Officer. It should seek to strengthen that link and seek ways to build capacity within the public health delivery sector. The organization of regular meetings between GP/FHPs and health officials to discuss problems, priorities and solutions may be a first, positive step in this direction. In many countries it is necessary to create village and community level institutions from nothing for this purpose. The project should encourage WSGs to take an active role in creating an ongoing dialogue between all partners within the health sector around the improvement of services.

The CS8 project faces a difficult situation in that there appear to be few if any other, indigenous, non-governmental institutions in the project area upon which to build and subsequently transfer responsibility for many project activities.

As awareness of the importance for the CS8 interventions is built and the community begins to recognize their effects, a sustainable demand for project activities and preventive health services is being created. This growing demand was made clear in discussions with community leaders in several villages. These leaders understood the project strategy and even recognized that the scope had been expanded beyond that of CS4 under CS8. It is hoped that this demand and behaviors linked to the utilization of services will continue beyond the end of CS8 activities in those communities.

## 9. Recurrent Costs and Cost Recovery Mechanisms

BFO and project staff are acutely aware of the effect of CS8 recurrent cost expenditures on the project area's ability to sustain impact beyond the end of funding in 1995. The CS8 project budget does support a number of recurrent costs of operation (notably stipends for FHPs and materials in support of public sector delivery of services such as immunizations). It does not appear, at this time, any mechanism that will support these recurrent expenditures beyond the end of the project.

The project has attempted to address the issue of financial sustainability of recurrent costs through a limited attempt to recover recurrent costs through direct beneficiary contributions. The results of this initiative should be interpreted with some encouragement despite their inability to generate high levels of revenue and therefore recover a high percentage of recurrent costs.

The CS8 project has allowed FHPs to "sell" iron tablets to women participating in CS8 antenatal care activities. In this instance, women receiving antenatal care were asked to pay a one time registration fee of two takas. For this contribution, they received counseling and a regular supply of iron tablets which they are instructed to take for the duration of their pregnancy as well as any treatments required for infections (requiring the use of expensive antibiotics). The cost of the same iron tablets alone in a private pharmacy in Bangladesh is approximately 17 takas. The CS8 project had originally hoped that the sale of iron tablets and other drugs (contraceptives) would permit it to recover tot only the costs of those drugs but also replace the project financed stipend for the FHP.

Clearly the fees that have been charged were never set at a level which would have permitted the generation of revenues capable of recovering such a high percentage of recurrent costs. The two taka fee was chosen by project staff based upon strong (but unsubstantiated) beliefs about both the willingness and ability of women in the project area to pay for antenatal services (or any services in general).

The results of the MotherCare project final evaluation indicate that over 90 percent of women participated in the program despite the imposition of the two taka fee. None of the remaining women reported the fee as a reason for their non-participation. These results are significant in that they directly contradict the current "conventional wisdom" which dictates (with scant evidence to support such a claim) that it is not possible to ask beneficiaries to contribute directly (i.e. pay) to the cost of preventive services. By requiring women to pay a one time fee which was not (perhaps in the minds of the women) linked directly to the provision of iron tablets the case made for their willingness to pay may be slightly weakened.

Although the original project proposal called for the FHPs to experiment with the sale of contraceptives, this idea has been abandoned due to the prevailing government policy which calls for the free distribution of modem contraceptives.

Based upon the CS8 experience so far, it is not possible to estimate the potential for cost recovery presented by services and activities like those offered by the project. Many of even the poorest of the African countries are now realizing that the potential for cost recovery for all types of services (not just curative) may be much higher than previously thought.

It is the view of the mid-term evaluation team that currently none of the current project activities will be able to continue past the end of project funding (September 1995) without the further infusion of external funds due to lack of local funds, initiatives and mechanisms to cover recurrent costs. The project team must address this issue immediately. The CS8 project must develop and explore opportunities to more thoroughly and system&ally assess the potential for recurrent cost recovery for all services (not just antenatal) before the end of the project. The-t should accurately estimate the cost of delivery of services. It should undertake research in order to better estimate feasible targets for the **recovery** of recurrent costs through the collection of direct or indirect community contributions. The BFO should examine the need for and the availability of resources to support external technical assistance in this area.

## 10. Recommendations

The mid-term evaluation team makes the following major recommendations for the CS8 project:

1) Given the importance of the question of financial sustainability of the CS8 model, **it is recommended that the project fully explore the questions of ability and willingness to pay for services.** It is unrealistic to assume that the population in the project area can assume the full recurrent costs of the CS8 project through the implementation of any (direct or indirect) cost recovery mechanism(s).

   The CS8 project need not set total financial self sufficiency as its ultimate goal. The project does not, however, currently have any notion as to how to set realistic goals for the population to contribute to the financing of its health services. The project should undertake research into the question of willingness to pay for preventive (and curative) services. It should experiment with mechanisms to collect fees or otherwise generate revenue capable of making a significant contribution to the recurrent costs of project operation. This has not been done with sufficient rigor by the project, The project should explore the potential for WSGs to play an expanded role through simple commumty financing and insurance schemes.

   All attempts to recover recurrent costs should be evaluated in terms of:

   - their ability to generate revenue beyond the administrative costs of fee collection; and
   - impact on utilization of services.

It is only with this information that the project can develop a long term plan to assure the sustainability of both services and impact that the CS8 has demonstrated. The project should reallocate existing CS8 funds to insure that research to improve sustainability can be conducted.

2) The project must **explore ways to improve the quality of curative and referral services available to the population in the project area. The** lack of quality curative referral services in the project area is of concern. The project cannot continue to generate demand for services which do not exist. The project should reallocate existing resources to this effort if necessary. Efforts to improve the quality of services can be concentrated in two areas:

- The project should expand its training program for village "doctors". These "doctors" deliver the majority of primary, curative services to the population in the project area (and probably throughout most of Bangladesh). They appear willing to be trained. They should be an integral part of the overall strategy to reduce mortality due to ARI and diarrhea. They should be trained to eliminate some of the misuses of medications that have been attributed to their practices. The village doctors should be seen as a potential resource. The project should work with the doctors to insure that their fees do not deny access to simple curative services to a large segment of the population.

- The project should explore ways in which it can help improve the availability and quality of services through the public sector. The lack of emergency obstetric services is a major concern but beyond the scope of the CS8 project. The Thana Health Administrator has requested a generator for the Thana Hospital. This request should be considered favorably (given the need) and the project budget adjusted accordingly. The project should look for other feasible inputs (financial, training, material, etc.) that might play a role in attempts to improve public sector service delivery. A serious attempt should be made to allow the Family Welfare Centers to function more effectively.

3) The project should **continue to devote sufficient effort to the upkeep and continued development of the PMIS and improved research and analytical capacity. The** information system developed by the CS8 is impressive. The BFO does not currently have the resources to fully analyze all of the data that it generates. The BFO and CS8 should support all efforts to improve the utility of the data and analyses that the PMIS produces. This will improve project management, assist the BFO in refining interventions so as to improve their impact on child survival and women's health, and provide information required in discussions concerning sustainability. The establishment of linkages between the BFO and academic and/or research institutions to conduct collaborative research and analyses of PMIS data should be explored. The project should reallocate unspent funds for applied research and analysis of PMIS data.

4) The project **should develop plans for the expansion of the CS8 model to include the entire Nasirnagar Thana. Based upon those plans, USAID should extend the CSS project and provide additional financial resources to allow the BFO to implement the model on a Thana wide scale.** **The Thana** is the functional level of operations and management within the public sector. If the CS8 model is to be replicated elsewhere in Bangladesh (by government or other **PVO/NGOs),** it must be developed to be capable of covering an entire **Thana.** The BFO should be able to clearly define the inputs and resources necessary for implementation at that level and should document the potential for impact as well. It may be possible that this expansion be carried out in using a phased approach. By phasing in interventions one at a time, it may be possible to gain some insight into the relative contribution of each in relation to the achievement of project objectives. Such information would potentially prove important in defining a reduced (but perhaps more financially sustainable) package of activities and interventions for the future.

## 11. Summary

A mid-term evaluation of Save the Children (USA) Child Survival 8 grant activities was conducted between 1 - 15 May 1994. The evaluation team consisted of one external expert (team leader, James C. Setzer) and relevant staff of Save the Children (USA) home office (Dr. Katherine Kaye) and Bangladesh Field Office (Dr. Azfal Hossain, Dr. Najma Khatum and Lisa Lamer-Krift). The team conducted an extensive review of project documents and interviews in Dhaka and carried out a four day field visit to a number of project sites in the Nasimagar Thana.

Major findings of the evaluation include:

- The project has successfully implemented its community based strategy and all members of the target communities have been registered.
- Using the community based registration system and its Family Health Promoters, the project has been able to deliver preventive services to a significant percentage of the at risk population in the project area.
- The project's health information system is a unique asset that will allow the project to assess the impact of its interventions on key indicators such as infant, child and maternal mortality.

The evaluation's major recommendations may be summarized as:

- The project should address the question of financial sustainability of its activities by strengthening efforts to determine the willingness and ability of the target population to contribute directly to the cost of service delivery.
- The project should continue to support the PMJS and continue to improve its analytic capabilities.
- The project should continue to find mechanisms to support and strengthen the service delivery capabilities of the Thana Health Office. Support should be both technical and financial.
- The project should develop plans to extend CS8 services to cover the entire Nasimagar Thana.

The CS8 Project has demonstrated its ability to organize and deliver key child survival interventions. This is impressive given the multitude of constraints and lack of health delivery infrastructure. As the project gains greater insight into mechanisms to promote greater financial sustainability, it will provide a number of important lessons and examples for the future.

**APPENDIX 1: Lii of Documents Consulted**


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2. Save the Children (USA)/Bangladesh Field Office, "Child Survival 4: Final Evaluation Report,, , November 1993

3. Save the Children (USA)/Bangladesh Field Office, "Child Survival 8 Annual Report FY 1993", October 1993

4. Save the Children (USA)/Bangladesh Field Office, "Child Survival 8 Proposal; Integration of Health Activities and Women's Empowerment in Nasimagar and Rangunia Impact Areas,', December 1991

5. Save the Children (USA)/Bangladesh Field Office, Integration of Health Activities and Women's Empowerment; Nasimagar Thana, Brahmanbaria District, Rangunia Thana, Chittagong District: Detailed Implementation Plan; Child Survival 8", April 1993

6. Save the Children (USA)/Bangladesh Field Office; Management Information and Research Unit, "Program Monitoring Report for the Month of March 1994", April 1994

7. Save the Children (USA)/Bangladesh Field Office, "Final Report: Bangladesh MotherCare Project", April 1994 (Draft)

8. Save the Children (USA)/Bangladesh Field Office, "Child Survival 8: Baseline Survey Report", February 1993

9. Kaye, Katherine, M.D., M.P.H., Hossain, Afzal, M.D., M.P.H., "Impact of Save the Children's Nutrition Program on the Weight of Younger Siblings of Malnourished Children: Analysis of Data From Save the Children's Census-Based Information System", May 1994 (Draft)

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11. CARE/Bangladesh, "Mid-Term Evaluation Report: Child Health Initiatives for Lasting Development Project", April 1994

12. Kaye, Katherine, "Memo: Verification of Completeness and Accuracy of Manual HIS Records at Sentinel Sites and Non-Sentinel Sites and recommendations for Maintaining the Quality of HIS Data", April 1994

13. Save the Children (USA)/Bangladesh Field Office, “Bangladesh Field Office Vitamin A Training Curriculum and Messages”, October 1993

14. Save the Children (USA)/Bangladesh Field Office, “Program Plan and Budget; FY 1994", September 1993

15. Hirschhorn, Norbert, M.D., “Report to Save the Children (USA), Nepal and Bangladesh Field Offices, on Sustainability of Their Health and Development Programs”, December 1992

16. World Vision Relief and Development, Inc., “Mid-Term Evaluation Report: Dhaka Urban Integrated Child Survival Project”, 1993

**APPENDIX 2: Persons Contacted During Field Visit**

Nasirnagar IA Office:

1. Kalimullah Koli - Impact Area Manager
2. D. L. Sutradhar - CS Coordinator
3. Ms. Momtaz Begum - Women's Program Coordinator

GOB:

1. Dr. Shahidul Hoque - Thana Health Administrator
2. Other Drs. - Medical Officer, Thana Health Center
3. Thana Family Planning Officer
4. Mr. Jatindra - Asst. Thana Family Planning Officer

Nasimagar Union Office:

1. Sarkar Javed Iqbal - CDC
2. WSG Members (+ASA workers)

Kunda:

1. Ms. Rawshan Ara - CDC
2. Ms. Rasheda - CHO
3. Ms. Archana D'Costa - NMW
4. Ms. Shika, Sandha & Meherunnessa - CDOs
5. Family Health Promoters & Group Promoters
6. Mr. Jahar Lal - Office Asst.
7. Community Leaders (Group)
8. Village Doctors (Group)

Burishawar:

1. Ms. Shamsun Nahar - CDC
2. Ms. Parul Shahnaz - CHO
3. Ms. Shamina - CD0
4. Family Health Promoters & Group Promoters

GOB:

1. Pharmacist of Family Welfare Center
2. Family Welfare Assistant & Health Assistants

Volakot:

1. Ms. Kamnm Nahar - CD0 (CDC in-charge)
2. Ms. Rina Parveen - CHO
3. Ms. Lipi Rani - CD0
4. Family Health Promoters
5. UP Chairman and Community Leaders

GOB:

1. Ms. Anima - Family Welfare Visitor
2. Family Welfare Assistant

Appendix 3

COOPERATIVE AGREEMENT FAO-0500-A-00-2034

01-Jun-94

CHILD SURVIVAL VIII: BANGLADESH

| | YEAR 2: EXPENSES VS. PLANNED BUDGET | | | | | LOG: CUMULATIVE EXPENSES VS. TOTAL GRANT | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | EXPENSES YEAR 1 | EXPENSES 03/31/94 | PLANNED BUDGET | BALANCE | % SPENT | BUDGET YEAR 3 | CUMULATIVE ACTUAL | TOTAL BUDGET | BALANCE | % SPENT |
| Evaluation | 0.00 | 0.00 | 16,550.00 | 16,550.00 | 0.0% | 0.00 | 0.00 | 16,550.00 | 16,550.00 | 0.0% |
| Personnel | 63,893.91 | 56,975.40 | 92,390.00 | 35,414.60 | 61.7% | 251,216.09 | 120,869.31 | 407,500.00 | 286,630.69 | 29.7% |
| Travel | 3,470.93 | 4,586.84 | 11,100.00 | 6,513.16 | 41.3% | 14,929.07 | 8,057.77 | 29,500.00 | 21,442.23 | 27.3% |
| Communications | 1,192.95 | 1,944.19 | 2,000.00 | 55.81 | 97.2% | 2,807.05 | 3,137.14 | 6,000.00 | 2,862.86 | 52.3% |
| Facilities | 0.00 | 226.86 | 0.00 | (226.86) | | 0.00 | 226.86 | 0.00 | | |
| Other direct | 197.71 | 2,293.73 | 10,000.00 | 7,706.27 | 22.9% | 124,862.29 | 2,491.44 | 135,060.00 | 132,568.56 | 1.8% |
| Procurement | | | | | | | | | | |
| Supplies* | 14,679.92 | 7,593.00 | 20,620.80 | 13,027.08 | 36.8% | 0.00 | 22,272.92 | 35,300.00 | 13,027.08 | 63.1% |
| Consultants | 1,327.32 | 0.00 | 3,000.00 | 3,000.00 | 0.0% | 2,998.68 | 1.32 | 6,000.00 | 5,998.68 | 0.0% |
| Services | 0.00 | | 0.00 | 0.00 | | 0.00 | 0.00 | 0.00 | | |
| sub-total Procurement | 14,681.24 | 7,593.00 | 23,620.08 | 16,027.08 | 32.1% | 2,998.68 | 22,274.24 | 41,300.00 | 19,025.76 | 53.9% |
| Total Direct | 83,436.74 | 73,620.02 | 155,660.08 | 82,040.06 | 47.3% | 396,813.18 | 157,056.76 | 635,910.00 | 478,853.24 | 24.7% |

Year 1 = Sept.30,1992 - Sept. 30, 1993
Year 2 = Oct. 1, 1993 - Sept. 30, 1994
Year 3 = Oct. 1, 1994 - Sept. 30, 1995

Budgets revised to Amendment 3
*Supplies are individually under $500 per item.

**Appendix 4**

# Save the Children

# Bangladesh MotherCare Project

# Final Evaluation

Conducted as Part of the Bangladesh Child Survival 8 Midterm Evaluation

USAID Cooperative Agreement FAO-0500-A-00-2034

Dr. Afzal Hossain
Senior Program Officer
Health/ Nutrition/ Population
Save the Children Bangladesh Field Office

Dr. Najma Khatum
Senior Medical Officer
Save the Children Bangladesh Field Office

Dr. Nilufar Kamorez Jaha
Senior Programme Officer
GTZ/NIPORT Project

Dr. Katherine Kaye
Epidemiologist
Save the Children, Westport

8 June 1994

Save the Children
54 Wilton Road
Westport, CT 06880
(203) 221-4000

*Acknowledgments*

This Final Evaluation could not have been conducted without the help of Save the Children's dedicated Bangladesh Field Office Directors (Tom and Lisa Krift) and field-based staff: Mr. Kolimullah Koli (NasirNagar Impact Area Manager); Mr. Dwijendra La1 Sutradhar (NasirNagar Child Survival Coordinator); Mrs. Rawshan Ara Begum (Kunda Community Development Coordinator); Mr. Md. Shafiullah (Gokama Community Development Coordinator); Mrs. Rasheda Begum (Kunda Community Health Organizer); Mrs. Raihana Sultana (Gokama Community Health Organizer); Mrs. Archana De Costa and Mrs. Jahan Ara Begum (Kunda Nurse Midwives); Mrs. Sylvia Karmakar (Gokama Nurse Midwife); all Family Health Promoters; and also Mrs. Beena and Mr. Altaf (managers of the Kunda guest house).

Data collected by the team would have remained unanalyzed without the expertise of the Bangladesh Field Office Management Information Systems staff for their many long hours of work, we are grateful to Mr. Md. Adnan Anwar (Data Manager) and Mr. A. Rakib (MIR Assistant); we also appreciate the assistance provided by consultants: Mr. Md. Badruddoza (Consultant Analyst); and Mr. Kazi Md. Abdullah and Mr. Mir Md. Shahiduzzaman (data entry clerks).

The guidance and criticism offered by Mr. Nikhil Chandra Roy (Research Fellow, ICDDR,B MCH-FP Extension Project) were greatly appreciated.

Save the Children's Bangladesh MotherCare Project received USAID funding through Bangladesh Field Project Agreement 1659-004 of subcontract DPE-5966-Z-00: 8083-Z from John Snow, Inc. with funding from April 1991 through June 1993. Under this subcontract, the project benefited from the support and advice of Dr. Marge Koblinsky and from technical assistance provided by medical and social marketing consultants Dr. Al Bartlett, Mr. Kim Winnard and Mr. Richard Pollard. Project activities were continued with partial support from USAID Child Survival 8, Cooperative Agreement FAO-0500-A-00-2034, beginning October 1, 1992.

This final evaluation of the MotherCare project was conducted as Part 1 of the Child Survival 8 Midterm Evaluation.

Final Evaluation Team members are convinced that the MotherCare Project has benefited the women and children of Nasimagar, and hope that lessons learned can be applied more widely in Bangladesh. We are pleased to have had the opportunity to serve on the team.

***Abbreviations***

BFO-Bangladesh Field Office (Save the Children/USA)

CDC-Community Development Coordinator (SC staff)

CHO--Community Health Organizer (SC staff)

CS-Child Survival

DIE--daughter-in-law (in K&P survey)

FET--Final Evaluation Team

FGD--Focus Group Discussion

FHP-Family Health Promoter (SC staff)

FWC--Family Welfare Center (GOB)

FWV--Family Welfare Visitor (GOB)

GOB-Government of Bangladesh

HIS--SC's Health Information System (manual & computerized)

IEC--Information/Education/Communication

K&P--Knowledge and Practice

MCH--Maternal and Child Health

M&-mother-in-law (in K&P survey)

MUAC--mid upper arm circumference

NMW--nurse midwife

PMIS--Program Management Information System (computerized)

PNC-prenatal care

SC-Save the Children (U.S.A.)

SES-socio-economic status

TBA-traditional birth attendant

TT--tetanus toxoid

USA-ID--United States Agency for International Development

## *Table of Contents*

# Bangladesh MotherCare Project Final Evaluation

*Executive Summary*

## Background Information about the MotherCare Project

Save the Children's Bangladesh MotherCare Project aimed to reduce neonatal and perinatal mortality and maternal and neonatal morbidity through means which were sustainable and replicable. Mother&e Project interventions were developed during 1992 and implemented during 1993 in five villages of NasirNagar Thana (Brahmanbaria District), covering a total population of approximately 25,000; interventions which have proven successful will be replicated by Save the Children (USA) through its USAID-funded Child Survival 8 Project, which covers all unions in NasirNagar (a total population of approximately 160,000)..

The Bangladesh Field Office decided to implement MotherCare activities after observing that neonatal mortality rates remained fairly stable and continued to account for a high proportion of total infant mortality, despite the decrease in child mortality which followed implementation of Child Survival interventions. NasirNagar was selected as the site for project implementation because it is one of the poorest and most isolated regions in Bangladesh: landlessness is increasing; flooding persists for six months a year, making the maintenance of roads extremely difficult and costly; there is no electricity; and only 10% of women are literate.

The MotherCare Project has employed three strategies to improve maternal, perinatal and neonatal health: 1) an information/education/communication campaign directed toward pregnant women and influential family decision-makers (husbands and mothers-in-law); 2) training of TBAs and MCH clinic personnel to improve case management of simple complications during pregnancy, delivery and the post pax-turn period, as well as routine maternal and newborn health care; and 3) reduction of some obstacles which prevent pregnant and post partum women from following through on referrals for more advanced care for themselves or their newborns. Together, these strategies were intended to increase the practice of protective health care behaviors at the family level; to increase use of appropriate preventive and curative services; and to increase the quality of field-based preventive and curative health services for pregnant women and their children. While it was recognized that improvement of service capacity and quality at referral hospitals is essential to reduce maternal and neonatal mortality, direct improvement of such services was outside the scope of this project: findings from various phases of the MotherCare Project have been, and will continue to be, shared with government health policy makers, in an effort to increase the allocation of resources for training and posting of health personnel needed to deliver women's health services, and for improvement of hospital-based obstetric services.

## Final Evaluation Activities

Final evaluation of the MotherCare Project occurred in March and April, 1994, and included the following activities:

*I.* review of data collected in Save the Children's census-based health information system to document birth and infant death rates which prevailed in the project area before and during the project interventions;

2. study of women's nutritional status through surveys of mid-upper arm circumference;

3. review of field-based health worker registers to determine levels of attendance at prenatal care sessions and TT immunization of pregnant women;

4. assessment of changes in knowledge and practice (including willingness to follow advice concerning referral) on the part of mothers, husbands and mothers-in-law through a) review of baseline and final K&P survey results; and b) focus group discussions; and

5. assessment of case management practices of TBAs and SC's nurse midwives and Community Health Organizers through a) review of postnatal questionnaire results and field-based management records; and b) focus group discussions with health care providers.

**Lessons Learned**

**1. The Project resulted in significant increases in levels of knowledge and practice among pregnant women and influential family decision-makers.**

Both K&P survey results and focus group discussions show clear and significant increases in levels of knowledge on the part of mothers, husbands and mothers-in-law. All groups are more aware and supportive of behavioral changes:

a. that can improve the health of women during pregnancy: e.g., attendance at PNC sessions, increased food consumption, intake of iron tablets, and increased rest; and

b. that can improve the health of mothers and newborns post partum: e.g., increased maternal fluid intake, avoiding food restrictions, intake of Fe, feeding colostrum, exclusive breastfeeding through the first four months after birth, and controlling fertility through modem contraception.

There was also a significant increase during the course of the project in mothers' perception of support from other family members (husbands, mothers-in-law) for protective health behaviors.

Perhaps more importantly, the K&P survey showed significant increases in certain protective practices:

a. intake of iron tablets during and after pregnancy;
b. increased food intake during pregnancy;
c. some improvement in breastfeeding practices (regarding feeding of colostrum and exclusive breastfeeding in the period immediately post partum);
d. increased attendance at PNC sessions (important in view of the finding that women who attended PNC were also more likely to receive TT during pregnancy and to take Fe);
e. increased use of trained TBAs and preparation of items needed for hygienic deliveries; and
f. increased willingness to seek treatment for complications in delivery.

**2. The Project resulted in improvements in TBA management of normal deliveries and in referral of complications, and offered greater insight into obstacles to referral.**

By the end of the project, significantly higher proportions of mothers reported that TBAs had used soap and plastic sheets during delivery and had boiled blades. Materials (such

as hot compresses, ash) were less likely to be placed on the umbilical cord; this is important, as placement of materials on the umbilical stump was significantly associated with neonatal health problems.

There was no association between delivery by a trained TBA and the incidence of maternal problems post par-turn. Infants who were delivered by trained TBAs, however, were significantly less likely to have health problems. Given the current debate over the impact of TBA training and use of safe birth kits, this association bears more careful investigation, with control for possible confounders.

Although the constellation of problems reported as occurring during pregnancy was somewhat different in the final survey than it was in the baseline, dizziness remained the leading problem; even in the final survey, however, women usually required prompting before reporting they had experienced any problems in pregnancy. Their failure to report problems spontaneously, along with their tendency not to regard problems as "serious", makes it difficult to assess levels of knowledge about potentially serious problems during pregnancy and/or willingness to seek treatment. Prolonged or delayed labor was the most common problem occurring during delivery, while "fever" accounted for the largest proportions of problems occurring in the post partum period. Symptoms of AR1 accounted for most problems of the newborn.

K&P surveys, postnatal questionnaires and focus group discussions indicated that for problems in pregnancy or delivery, women and their families would begin by seeking care from local providers (SC personnel, who were more likely to be consulted for problems in pregnancy, and village doctors, who were more likely to be consulted for problems in delivery and for problems concerning the newborn); only if these local providers were unavailable or unable to help would they go to the hospital. FGDs suggested that the TBA training program had improved the status of TBAs to the point where their advice on the need for advanced care was generally heeded. Even after TBAs advised referral, however, families would try to obtain help from NMWs or village doctors. Local government providers were consulted for only a small proportion of problems: focus groups expressed dissatisfaction with providers at some government service sites, usually because of the absence of such providers from their posts. It must be acknowledged, however, that throughout the course of this project, the Government of Bangladesh has been undertaking programs designed to improve both the quality and capacity of MCH services and to increase the number of government personnel who are actually posted in villages; NasirNagar is a particularly difficult area for recruitment.

The most common reason given by mothers for not seeking treatment for problems which occurred during pregnancy was their perception that the problem was not serious; even at the time of the final K&P survey, mothers required prompting--through the listing of possible symptoms--before they indicated that they had experienced problems in pregnancy. The next most common reason for not seeking care or not accepting advice for referral was lack of money. Financial constraints limit the extent to which mothers and families can turn to village doctors for help: even though village doctors claimed to treat the poorest members of the community on credit, mothers-in-law and husbands said that their care was prohibitively expensive. The current quality of care offered by village doctors is of concern: their administration of syntocin to women in labor is just one of many practices that may adversely affect the health of women and infants. Although some mothers cited religious or traditional convictions as barriers to obtaining care for themselves, proscriptions against leaving the home did not appear to be an important obstacle.

**3. During the course of the MotherCare Project, improvements were seen in birth and infant death rates.**

Between the start of 1990 and the end of 1993, data from Save the Children's health information system show that the birth rate dropped from 37 to 32; infant mortality from 116 to 100; and neonatal mortality from 54 to 53. The population covered by the Project is too small to allow any reliable calculation of maternal mortality. The extent to which changes in rates of vital events reflect project interventions is uncertain: no control area was studied, and normal annual fluctuations in birth and death rates may be responsible for some of the change.

A slightly higher proportion of neonatal deaths was attributed to tetanus in 1993 than in 1990: this may reflect the shortage of tetanus toxoid which occurred during the first few months of that year. As in the 1991 case study, the main cause of neonatal death in 1993 was ARI.

**4. While a large proportion of women of reproductive age are malnourished, it seems possible to identify some groups of women who are especially vulnerable.**

In the baseline survey, the mean MUAC for women aged 15 to 45 years was 22.2 cm; 8% of the population was severely malnourished and 32% moderately malnourished. In the final survey, mean MUAC was 22.6 cm; 5 % of the population was severely malnourished and 25% moderately malnourished. In both surveys, MUACS of poorer and younger (15 to 20 year old) women were significantly smaller than those of "more affluent" and older (26 to *35* year old) women.

***Recommendations***

**1. In view of the tendency of women and their families to try to obtain care from local sources (even after referral to hospital), improved capacity for field-based case management is essential. As advocated by UNICEF and the Obstetrical and Gynaecological Society of Bangladesh, field-based care providers at all levels should be able manage obstetric emergencies appropriately and, to the extent possible, to stabilize patients until they or their families agree to referral.**

The ability of SC's nurse midwives and CHOs to manage cases in the field was severely limited by the BFO's proscription against their use of injectable antibiotics or IV drugs or fluid replacement: even though nurse midwife case management protocols clearly require these capabilities, nurse midwives and CHOs were instructed to refer women and newborns requiring such treatment to hospital, or to government FWVs or even village doctors if hospital transfer was not immediately possible or was refused. SC BFO staff believed that if the agency were to offer such treatment, it would increase community reliance on a source of care that will not be sustained after the end of the CS8 project and might increase the agency's liability for any mishaps; because it is very difficult to attract highly experienced personnel to a post like NasirNagar, this last concern is not unfounded.

Given this pmlosophy, however, it is imperative that the agency improve the case management abilities of local government and non-government providers and strengthen logistics to ensure that government providers have access to adequate supplies. SC can establish channels for communication between village leaders and thana-level administrators: dialogue on family planning issues with thana-level administrators has already been initiated; such dialogue should be broadened to include issues related to emergency obstetric treatment and other aspects of reproductive health, and should invite participation from representatives of the Unicef-supported Emergency Obstetric Care Programme.

Care from village doctors cannot be accessed by the poorest members of the community. Nevertheless, training of village doctors should be undertaken in order to improve the quality of their practice: these providers will remain an important source of care for a large proportion of community residents long after the end of Save the Children's programs. The Agency might pilot some mechanisms to increase access of the poorest community residents to village doctors: for example, the provision of small stocks of free supplies to village doctors, with the stipulation that such supplies be reserved for the poorest families. With the cooperation of community **and** religious leaders, SC could train village doctors in the administration of injectable contraceptives.

**2. The IEC strategy employed in the MotherCare Project achieved significant increases in community knowledge and practice, and should be replicated.**

The approach taken in this project is noteworthy for targeting husbands and mothers-in-law, as well as pregnant women: mothers' perception of increased support from influential family decision makers may have been as important in increasing their practice of protective behaviors as their own increased level of knowledge.

Operations research projects could certainly be designed to compare the effectiveness of strategies focused on pregnant women alone to those focused on women and other family members. It seems more advisable, however, to simply accept the effectiveness of the strategy employed in this project and to devote additional resources to improving field-based case management and increasing the feasibility of referral and the availability of contraceptives.

**3. In view of findings that malnutrition was greatest among poorer and adolescent women,**

**income generation opportunities for the poorest community residents remain essential; and**

**an IEC campaign, focused again on influential family members, should be designed to increase food intake by young and adolescent girls.**

**4. Given the frequent citing of financial barriers to acceptance of advice for referral, Save the Children should continue to try to develop mechanism5 to reduce those barriers.**

The establishment of Emergency Referral Funds through Women's Savings Groups was not successful, in part because WSG members thought it was too risky to designate any part of their savings for this purpose; there appeared to be some confusion in the minds of Savings Group members about the concepts of insurance vs. loans for hospital care. Other strategies which Save the Children might employ--which could be replicated by other NGOs, but are not necessarily sustainable--include agency-subsidized transport of cases needing emergency care, perhaps through community endowments.

## *I. Introduction*

### A. Description and History of Project

Following is the Final Evaluation Report on Save the Children's Bangladesh MotherCare Project. The project has employed three strategies to reduce maternal, perinatal and neonatal mortality: 1) an information/education/ communication campaign directed toward pregnant women and influential family decision-makers (husbands and mothers-in-law); 2) training of TBAs and MCH clinic personnel to improve case management of complications during pregnancy, delivery and the post partum period, as well as routine maternal and newborn health care; and 3) reduction of some obstacles which prevent pregnant and post partum women from following through on referrals for more advanced care for themselves or their newborns. Together, these strategies are intended to increase the practice of protective health care behaviors at the family level; to increase use of appropriate preventive and curative services; and to increase the quality of field-based preventive and curative health services for pregnant women and their children.

While it was recognized that improvement of service capacity and quality at referral hospitals is also essential to reduce maternal and neonatal mortality, direct improvement of such services was outside the scope of this project: findings from various phases of the MotherCare Project have been, and will continue to be, shared with government health policy makers, in an effort to increase the allocation of resources for training and posting of health personnel needed to deliver women's health services, and hospital-based obstetric services.

The decision to implement MotherCare activities was made after Save the Children observed that neonatal mortality rates remained fairly stable and continued to account for a high proportion of total infant mortality, despite the decrease in child mortality which followed implementation of Child Survival interventions. A case study undertaken in September/October 1991 examined all neonatal deaths and stillbirths which had occurred during the previous two years (1989-90) to clarify cause of death, patterns of health service use and nutritional practices: results of this case study informed the design of MotherCare interventions.

The Bangladesh Field Office's MotherCare Project has been implemented in five villages of NasirNagar Thana (Brahmanbaria District), covering a total population of approximately 25,000. NasirNagar, a low lying area much of which remains under water for four to six months during the monsoon season, is located 90 km northeast of Dhaka: the region is one of the country's most poor, isolated and culturally conservative areas. Until the beginning of 1993, Save the Children maintained health centers in two villages in this region, Kunda and Gokama. Although the population in the project area could theoretically be served by four government maternal and child health facilities, those facilities have until recently been too poorly staffed and/or equipped to be of much practical help. The BFO is now in the process of implementing those educational activities and training programs which were developed during the course of this project in a much larger program area (covering a total population of 160,000).

Aside from the case study mentioned above, past research and evaluation activities which are relevant to this Final Evaluation are as follow:

1. study of the nutritional status of women of reproductive age: at the time of the case study, mid-upper arm circumference measurements were made on all women of reproductive age living in the project area.

2. baseline Knowledge and Practice surveys: these surveys were conducted from November 1992 to February 1993, before the implementation of IEC materials, and included all women who had delivered during the previous two months, their husbands and their mothers-in-law.

3. midterm evaluation (April, 1993): the "midterm" evaluation actually fell near the start of project implementation and was therefore focused on process rather than impact; two forms developed during this evaluation (the Postnatal Questionnaire and the Clinic Management Form) were used to assess case management.

## B. Final Evaluation Activities

The Final Evaluation aimed to measure project impact on 1) knowledge and practice of protective health care behaviors (including willingness to obtain advanced care) among pregnant women and other family members; 2)perinatal and neonatal mortality; and 3) other aspects of maternal and neonatal health (e.g., nutrition, morbidity). Although some evaluation activities focused exclusively on one strategy or another, it is impossible to differentiate the contribution of each of the project strategies to overall change.

Final Evaluation activities occuned in March and April, 1994 and included the following:

1. Review of Computerized Health Information System Data and HIS procedures:

   a. Review of PMIS Demographic and Health Data for 1990 and 1993:
   Birth and infant death rates and cause and time of infant death are compared for two intervals: that preceding implementation of MotherCare activities (1990) and the period of project implementation (1993).

   b. Review of HIS procedures:
   The Final Evaluation Team also reviewed whether the BFO had followed through on suggestions made during the Midterm Evaluation on strengthening the HIS to make it a more effective tool for reaching and monitoring pregnant women and newborns.

2. Study of Women's Nutritional Status

The final evaluation repeated the mid-upper arm circumference survey for all women of reproductive age living in the project area; after stratification for pregnancy, socioeconomic status, age and marital status, results were compared to findings from the first survey. It should be noted, however, that IEC messages imparted during the MotherCare Project were focused on pregnant women--not all women of childbearing age. Moreover, the two surveys took place at different times in the year. Thus, the results should not used to assess the impact of project interventions; rather, they simply provide greater insight into a major risk factor for poor maternal and neonatal health.

3. Assessment of Changes in Knowledge and Practice, and Exploration of Reasons for Change

   a. Knowledge and Practice Surveys:
   The same questionnaires which were used in the baseline survey were administered to all women who delivered during the two months preceding this evaluation (January-February, 1993), and to their husbands and mothers-in-law. Results of baseline and final surveys are compared to assess changes in levels of knowledge and practice.

b. Focus Group Discussions:
Focus groups with mothers, husbands, mothers-in-law, health care providers and community leaders explored their perceptions about reasons for behavioral change, as well as their impressions of the IEC strategy.

4. Review of HIS and PNC Records to Determine Levels of Attendance at PNC Clinic and TT Immunization

a. PNC attendance:
The Final Evaluation Team reviewed the "fertile couples" and antenatal rosters of FHVs and CHOs to assess the level of participation in prenatal care: as in the Midterm Evaluation, this involved a systematic comparison between numbers of women listed as possibly pregnant by Family Health Volunteers (FHVs), women confirmed as pregnant by Community Health Organizers (CHOs), women with one PNC visit, and women with a second PNC visit.

b. Tetanus immunization:
TT coverage among women who are "confirmed pregnant" was assessed by examining the CHOs' pregnancy registries.

5. Evaluation of Case Management Interventions

a. Review of Postnatal Questionnaires, Nurse Midwife and CHO Records, and Clinic Management Forms:
Information from the postnatal questionnaires allowed us to determine whether TBA training included in this project was associated with improved TBA management of routine delivery. The Final Evaluation Team studied records maintained by NMWs and CHOs, in order to determine more accurately whether complications had been managed correctly.
Information from Postnatal Questionnaires also allowed the Final Evaluation Team to determine the proportions of women who followed advice on referral, and to study their reasons for not seeking or obtaining advanced care, if so referred.

b. Focus Group Discussions (FGDs):
Discussions with TBAs, CHOs and NMWs explored their perceptions of training materials and sessions; problems in diagnosis, management and referral; and obstacles to referral. FGDs were also conducted with village doctors to explore their perceptions of training needs and their receptivity to training. (The report on FGDs is included in the section on the K&P survey.)

## *II. Review of HIS Data and Procedures*

### A. PMIS Data on Demographic and Health Indices in Project Area

Data collected in Save the Children's community-based Health Information System allow the routine monitoring of mortality as well as the targeting of education and services toward pregnant women and their families. The MotherCare Project was implemented in five villages in Nasimagar: Kunda, Moslendapur, Gokarna, Chairkury and Nurpur.

Table I presents demographic data and rates of stillbirth and infant mortality for the project area one year before the project (January l-December 3 1, 1990) and during project interventions (January l-December 3 1,1993). Birth and mortality rates are compared to 1991 national rates (1993, UNICEF).

***Table 1: Demographic Data for Project Area***

| | before project | during project | national |
|---|---|---|---|
| total population | 26,091 | 25,436* | |
| women aged 15-45 | 4,832 | 5,224 | |
| live births | 973 | 810 | |
| crude birth rate | 37 | 32 | **39** |
| infant deaths | 113 | 81 | |
| infant mortality rate | 116 | 100 | **101** |
| neonatal deaths | 53 | 43 | |
| neonatal mortality rate | 54 | 53 | |
| stillbirths (gest > 7 mo) | 62 | 32 | |
| stillbirths:livebirths | 6:100 | 4:100 | |
| perinatal deaths | 87 | 57 | |
| perinatal death rate | 89 | 70 | |
| maternal deaths** | 3 | 3 | |

*PMIS reports mid year populations, in this case for 1990 and 1993; these figures do not include persons who may have temporarily migrated out.

**Systematic investigation of deaths occurring among women aged 10 to 45 years was instituted by BFO staff in 1993. Maternal deaths--i.e., deaths directly or indirectly related to pregnancy, occurring either during pregnancy or within 42 days post partum--were not so rigorously ascertained before 1993. Our denominator is too small to allow calculation of a valid maternal mortality rate.

Tables 2 and 3 compare neonatal deaths which occurred during the two periods according to rime and cause of death. Because causes of death listed in Table 3 are drawn from SC's routine HIS records, the distribution of causes may differ from that reported in the 1991 case study: cause of death assignment in the case study was through verbal autopsy. In this table, "birth related" refers to deaths occurring within two weeks of birth which could not be assigned any other cause: this category is likely to include premature or low birthweight infants who died without any other recorded complication.

***Table 2: Time Distribution of Neonatal Deaths***

| time of neonatal death | baseline | 1993 |
|---|---|---|
| day I | 17% | 32% |
| days 2-6 | 38% | 26% |
| days 7-28 | 45% | 42% |

***Table 3: Neonatal Deaths by Cause of Death***

| | baseline | 1993 |
|---|---|---|
| cause | | |
| ARI | 19% | 23% |
| thrush | | 7% |
| sepsis | 2% | |
| fever | 2% | |
| diarrhea | | 2% |
| tetanus | 6% | 9% |
| malnutrition | 4% | 5% |
| others | 6% | 5% |
| birth related | 63% | 49% |

The slight increase in deaths from tetanus in 1993 may reflect the shortage of vaccine which occurred in the early months of that year. In both years, ARI follows "birth related" as the leading cause of neonatal death.

## B. Review of HIS procedures

### *1. Reporting of Maternal Deaths*

At the time of the 1991 Case Study and the April 1993 Midterm Evaluation, recommendations were made to BFO health staff for improving the recording of maternal deaths: in 1991, it was difficult to ascertain maternal deaths because the pregnancy status of the deceased person was not noted in the HIS. In 1993, the BFO took steps to significantly improve the detection of deaths related directly or indirectly to pregnancy: in their manual death records, FHPs are required to record symptoms associated with all deaths; two possible "symptoms" are pregnancy or death within 42 days of delivery. In addition, the BFO Senior Program Officer for Health has been verifying the cause of death for all women aged 10 to 49 years. Ascertainment of maternal deaths has improved to the point where the BFO's data base may **now be** one of the most reliable in Bangladesh: as the BFO's CS8 project covers a population of 160,000, it becomes more feasible to generate maternal mortality rates.

### *2, Identification of Primigravidas Not Regularly Residing in Project Area*

Only those persons who have resided in the project area six months or more are enrolled and monitored in SC's HIS. This is a sensible approach to the longitudinal monitoring of a fairly stable population, but it may fail to identify a particularly high risk group: primigravidas who migrate from a site outside the project area back to their parent's home, just to deliver. While it would be inadvisable to include these women in the permanent population base, some mechanism should be developed whereby FHPs can systematically identify them, refer them to a trained TBA for delivery (or to prenatal care if they have arrived in the project area well before delivery), and record the outcome of their delivery.

### *3. Use of Home-held Maternal Health Cards*

Maternal health cards are kept at the SC PNC clinic. The GOB distributes maternal TT cards, but distribution is sporadic; in its CS8 area, SC is complementing government distribution of TT cards.

It might be worthwhile to pilot more complete home-held cards in at least part of the CS8 project area: such cards would make it easier for a woman who migrates (whether or not she is pregnant) to inform local health care providers of her health history.

### 4. *Verification of Seasonality of Births and Infant Sex Ratios*

In comparing results from the baseline and final K&P surveys, we noted that the numbers of births reported during the two-month baseline period was considerably lower than that for the two-month final period. We examined the distribution of 1993 births by month for two villages (Kunda, Moslendapur), and found that the proportion of births occurring during the November through January quarter was higher than that for any other quarter: of a total 346 births, 35 % were born November through January; 23 % in February through April; 19% in May through July; and 23% in August through October.

In both the 1991 case study and the sample of postnatal questionnaires reviewed during the final evaluation, the number of female infants was somewhat less than would be expected based on the normal 51:49 male:female ratio. Although SC's community-based HIS makes it exceedingly unlikely that the births of females would be under-reported--a mother would need to conceal her pregnancy in order for a birth to escape detection--the FET sought to verify that the observed departure from the normal ratio was due only to the relatively small size of study populations. The FET examined 1993 birth registers in Kunda/Moslendapur and Gokarna/Chaikury to determine the sex ratio for births (live births+ stillbirths): out of the 346 births in Kunda/Moslendapur, 52% were male and 48% female; out of the 277 births in Gokarna/Chaikury, 49.5 % were male, 49.5 % female and 1% of unknown sex.

## *III. Women 's Nutritional Status: Mid-Upper Ann Circumference Surveys*

### A. Introduction

A high level of malnutrition among adolescent girls and women in rural Bangladesh increases the risk of low birth weight and infant mortality as well as maternal mortality and morbidity. In the baseline study and final evaluation, we quantified this risk factor for our program area by measuring mid-upper arm circumference for women of reproductive age. It should be remembered that MotherCare Project interventions focused on pregnant women and their family members, rather than on all women of reproductive age; thus, any changes in women's nutritional status between start and end of the project could not be attributed to project interventions. Moreover, the baseline and final MUAC surveys took place during different seasons. Thus, these surveys simply increase our understanding of a major risk factor.

The project area included the villages of Kunda, Moslendapur, Gokama, Chairkury and Nurpur in Nasimagar, Brahmanbaria District. At the time of the final survey, total population in the project area (as determined by manual census) was 24,195; this decrease from the midterm 1993 population reported in PMIS may reflect seasonal out-migration.

### B. Methods

The baseline study was conducted in August and September, 1991, and the final survey in March, 1994. During both periods, food in Nasimagar is relatively scarce; in March, however, an inexpensive "low quality" rice is somewhat more readily available at market.

Color coded arm circumference tapes were provided by the Bangladesh Population and Health Consortium; these tapes were also marked in centimeters, with ranges of mid-upper arm circumference (MUAC) designating various levels of nutritional status as follow: C20 cm = severe malnutrition; 20.0-21.9 cm = moderate malnutrition; 21.9-22.9 cm = mild malnutrition; and > 23 cm=normal nutrition. Both baseline and final surveys were conducted by Save the Children's female community outreach workers, under the supervision of the agency's Community Health Organizers.

Information about other variables was obtained from SC's Health Information System and included in the MUAC data set: these other variables included maternal age, marital status, and socioeconomic status. (SC developed a system for socioeconomic classification of the population in its program areas based on a variety of variables including land holding, monthly cash income and food supply; approximately 70% of the population fall into the poorest classes, C and D.) Outreach workers also recorded whether a woman was pregnant or lactating at the time of MUAC measurement.

The 3974 women measured in the baseline survey represented 90% of all women aged 15 to 45 years living in the project area. The 4215 women measured in the final survey represented 81% of the 5224 women aged 15 to 45 years living in the project area.

Statistical analysis of differences between means was conducted using t tests in the SPSS software package.

### C. Results

In the baseline survey, the mean MUAC for the entire population was 22.2 cm. Eight per cent of the population was severely malnourished; 32 % moderately malnourished; 23 % mildly malnourished; and 37% normally nourished. In the final survey, the mean MUAC for

the entire population was 22.6 cm. Five per cent of the population was severely malnourished; 25 % moderately malnourished; 22 % mildly malnourished; and 48 % normally nourished.

Tables 1 and 2 present findings from the baseline and final surveys, stratified according to age, socioeconomic and marital status, and by whether or not the woman was pregnant at the time of the survey. In both surveys, MUAC of non-pregnant women decreased significantly with decreasing socioeconomic status: when differences in MUAC means between non-pregnant women in different socioeconomic classes were considered, each class was found to have a mean significantly greater than the one immediately below ($p < .001$ to $p < .05$).

In the baseline survey, we observed that married women tended to have higher mean MUACs than unmarried women: this trend achieved statistical significance in the final survey ($p < .001$). Mean MUAC was slightly higher among pregnant than among non-pregnant women, but this difference was not significant.

In both the baseline and final survey, women in the 15 to 20 year age group had significantly smaller MUACs than women aged 26 to 30 years and 31 to 35 years; in the final survey, women in the youngest age group also had significantly smaller MUACS than women aged 21 to 25 years ($p < .05$). There were no significant differences in MUAC between the youngest women and those in the two oldest groups (36-40 and 4 l-45 years).

## D. Discussion

We cannot be certain that the socioeconomic status of the women who were included in the survey was similar to that of those not included (approximately 10% of the total population in both baseline and final surveys). Since the proportion of C and D class families in Save the Children's project area is approximately 70%, and since 64% of women enumerated in the final survey fell into these classes, we might assume that many of the women not included in the final survey would be from these poorer classes: if these women had been included, their (probably) lower MUACs would have reduced the population mean.

The final survey showed a slight increase in mean MUAC for the entire population of women aged 15 to 45 years, as well as a decrease in the proportion of the population which could be categorized as severely malnourished by MUAC measurement. This may reflect seasonal differences in food availability.

Poorer women and teenagers had the worst nutrition status. These findings suggest that nutritional interventions should continue to be targeted toward the poorest women and should be accompanied by programs which increase economic opportunities for them and for their families. It is questionable whether education alone could significantly increase food intake by the poorest women, but findings from our K&P surveys suggest that a concentrated IEC campaign can modify eating habits, at least during pregnancy. MUAC survey findings also suggest that nutrition interventions should be directed toward younger, unmarried women: any IEC strategy which emphasizes the importance of increased food intake by adolescent girls should be targeted to husband family members who control their food intake.

# TABLE 1
# BASELINE SURVEY

Mean MUAC by Pregnancy, SES, Age and Marital Status

**Pregnant**

| SES | A | | | | | | B | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Marital Status | Married | | Unmarried | | Other | | Married | | Unmarried | | Other | | Married | | Unmarried | | Other | | Married | | Unmarried | | Other | |
| | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # |
| AGE | | | | | | | | | | | | | | | | | | | | | | | | |
| 15-20 | 22.5 | 8 | | 0 | | 0 | 22.9 | 16 | | 0 | | 0 | 22.4 | 50 | 19.2 | 2 | | 0 | 21.6 | 22 | | 0 | | 0 |
| 21-25 | 22.5 | 8 | | 0 | | 0 | 22.7 | 26 | 22.5 | 1 | | 0 | 22.3 | 72 | | 0 | | 0 | 22.0 | 19 | | 0 | | 0 |
| 26-30 | 22.5 | 8 | | 0 | | 0 | 21.7 | 15 | | 0 | | 0 | 22.2 | 47 | | 0 | | 0 | 22.3 | 16 | | 0 | | 0 |
| 31-35 | 24.6 | 5 | | 0 | | 0 | 21.5 | 9 | | 0 | | 0 | 22.2 | 11 | | 0 | | 0 | 21.9 | 21 | | 0 | | 0 |
| 36-40 | 23.8 | 6 | | 0 | | 0 | 21.1 | 5 | | 0 | | 0 | 22.3 | 14 | | 0 | | 0 | 21.8 | 5 | | 0 | | 0 |
| 41-45 | | 0 | | 0 | | 0 | 20.5 | 2 | | 0 | | 0 | 20.8 | 1 | | 0 | | 0 | 23.0 | 1 | | 0 | | 0 |

**Not Pregnant**

| SES | A | | | | | | B | | | | | | C | | | | | | D | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Marital | Married | | Unmarried | | Other | | Married | | Unmarried | | Other | | Married | | Unmarried | | Other | | Married | | Unmarried | | Other | |
| | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # | Mean MUAC | # |
| AGE | | | | | | | | | | | | | | | | | | | | | | | | |
| 15-20 | 22.8 | 36 | 22.4 | 99 | 23.0 | 1 | 22.4 | 44 | 23.3 | 111 | | 0 | 22.3 | 120 | 22.0 | 190 | 21.6 | 2 | 21.6 | 70 | 21.5 | 109 | 22.5 | 1 |
| 21-25 | 22.7 | 86 | 23.4 | 51 | | 0 | 22.7 | 90 | 23.3 | 81 | 21.5 | 2 | 22.3 | 272 | 22.2 | 96 | 22.2 | 10 | 22.0 | 222 | 21.9 | 15 | 22.8 | 10 |
| 26-30 | 22.8 | 86 | 24.0 | 1 | 22.8 | 1 | 22.8 | 107 | 23.4 | 2 | 21.4 | 2 | 22.2 | 235 | 23.4 | 2 | 23.1 | 9 | 22.0 | 184 | 21.0 | 1 | 23.3 | 11 |
| 31-35 | 23.5 | 64 | 25.5 | 2 | 22.3 | 5 | 23.0 | 85 | | 0 | 23.5 | 1 | 22.0 | 203 | 20.0 | 1 | 22.1 | 6 | 21.1 | 162 | | 0 | 22.0 | 15 |
| 36-40 | 23.2 | 60 | 19.0 | 1 | 23.3 | 3 | 22.6 | 76 | 19.0 | 1 | 22.5 | 5 | 21.9 | 170 | | 0 | 22.3 | 6 | 21.9 | 109 | | 0 | 21.7 | 15 |
| 41-45 | 23.4 | 47 | | 0 | 23.1 | 3 | 22.1 | 64 | | 0 | 22.6 | 4 | 22.1 | 113 | | 0 | 21.7 | 11 | 22.2 | 54 | | 0 | 21.7 | 11 |

# TABLE 2
## FINAL SURVEY

Mean MUAC by Pregnancy, SES, Age and Marital Status

**Pregnant**

| SES | A | | | | | | B | | | | | | C | | | | | | D | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M/Stat | Married | | Unmarried | | Other | | Married | | Unmarried | | Other | | Married | | Unmarried | | Other | | Married | | Unmarried | | Other | |
| AGE | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC |
| 15-20 | 4 | 22.80 | | | | | 9 | 23.06 | | | | | 30 | 22.70 | 2 | 21.35 | | | 10 | 22.91 | | | | |
| 21-25 | 20 | 23.50 | | | | | 18 | 22.62 | | | | | 38 | 22.77 | | | | | 16 | 22.58 | | | 1 | 23.50 |
| 26-30 | 11 | 23.02 | | | 1 | 21.50 | 12 | 23.28 | | | | | 20 | 23.03 | | | | | 22 | 22.67 | | | | |
| 31-35 | 4 | 21.03 | | | | | 6 | 23.28 | | | | | 22 | 22.72 | | | | | 16 | 21.89 | | | | |
| 36-40 | 2 | 23.60 | | | | | 7 | 23.07 | | | | | 3 | 22.50 | | | | | 2 | 22.00 | | | | |
| 41-45 | | | | | | | 1 | 24.00 | | | | | 3 | 20.16 | | | | | | | | | | |

**Not Pregnant**

| SES | A | | | | | | B | | | | | | C | | | | | | D | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M/Stat | Married | | Unmarried | | Other | | Married | | Unmarried | | Other | | Married | | Unmarried | | Other | | Married | | Unmarried | | Other | |
| AGE | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC | # | MUAC |
| 15-20 | 43 | 23.67 | 95 | 23.16 | 1 | 21.50 | 60 | 23.00 | 136 | 22.80 | | | 150 | 22.80 | 209 | 22.14 | | | 82 | 22.55 | 123 | 21.83 | 2 | 23.50 |
| 21-25 | 87 | 23.31 | 24 | 24.03 | 3 | 24.50 | 95 | 22.60 | 18 | 22.30 | | | 309 | 22.70 | 35 | 23.01 | 9 | 22.84 | 197 | 22.50 | 11 | 21.37 | 3 | 22.57 |
| 26-30 | 77 | 23.21 | 3 | 25.00 | 1 | 24.70 | 89 | 23.10 | 3 | 22.20 | 1 | 21.70 | 238 | 22.80 | 3 | 22.67 | 7 | 22.31 | 190 | 22.39 | | | 14 | 22.96 |
| 31-35 | 91 | 23.58 | 3 | 24.40 | 8 | 23.49 | 113 | 22.70 | | | 4 | 21.63 | 274 | 22.60 | | | 9 | 22.47 | 190 | 22.52 | | | 11 | 22.76 |
| 36-40 | 43 | 23.91 | 1 | 20.00 | 6 | 22.87 | 54 | 23.20 | 1 | 19.20 | 3 | 21.00 | 132 | 22.00 | | | 7 | 23.10 | 93 | 22.23 | | | 9 | 21.97 |
| 41-45 | 42 | 23.82 | | | 4 | 22.68 | 68 | 22.80 | | | 1 | 27.00 | 113 | 22.10 | | | 13 | 22.49 | 54 | 21.96 | | | 10 | 21.89 |

## *IV. Review of Field-Based HIS Registers*

### A. Levels of Attendance at Prenatal Care Sessions

To measure present levels of PNC attendance and TT coverage, we examined pregnancy rosters of CHOs and TT rosters of FHPs. To help evaluate the likelihood that all pregnancies in the community were in fact included in the CHO's records, we compared the numbers of "possible pregnancies" recorded in FHP Family Planning rosters to the numbers of "confirmed pregnancies" in CHO rosters. We considered pregnancies for two paras (neighborhoods) in Kunda and one in Gokama. Results are as follow:

| Village | possible pregnancy | confirmed pregnancy | received TT in urea. | one PNC visit | two PNC visits | >2 PNC visits |
|---|---|---|---|---|---|---|
| Kunda | 109 | 109 | 74 (68%) | 19 (26%) | 69 (63%) | 6 (6%) |
| Gokama | 103 | 102 | 68 (66%) | 23 (22%) | 46 (45%) | 15(15%) |

### B. Comparison of Levels of PNC Attendance and TT Coverage to Those Found in Final K&P Survey

Review of records shows levels of PNC attendance similar to those observed in the final K&P survey: in the survey, 20% of mothers reported one PNC visit; 50% reported two visits; and 12% reported more than two. Review of records showed TT coverage to be somewhat higher than that observed in the final K&P survey: according to the survey, 57% of women had received TT during their pregnancy.

#### *Increase in PNC Attendance Since Start of Project*

The percentage of pregnant women who attended PNC sessions at least twice during their pregnancy substantially exceeds percentages recorded at the time of the Midterm Evaluation (when 39% and 34% of pregnant women in Kunda and Gokarna respectively had attended PNC clinic at least twice). The increase seen in K&P surveys was more modest: the percentage of mothers who had attended two or more prenatal care sessions increased from 56% at baseline to 62% at the time of the final evaluation. The Health Program Director thought that mothers may have under-reported their attendance at PNC sessions in the final K&P survey, in part because they perceived SC withdrawing some of its primary health care services.

***Limitation of TT Supplies***

SC has tried to design a sustainable immunization strategy: rather than administering immunizations directly, the agency refers women and children to GOB EPI sessions: FHPs inform those who need immunizations of the date and place of the next EPI session and give them identification slips (which specify the required vaccine) to bring to the session. Thus, the project population is subject to any vaccine shortages which may be experienced by the GOB: this was certainly the case for the first six months of 1993.

In the analysis of final K&P survey results, we examined levels of TT immunization among women who did and did not attend PNC clinic: while levels were certainly higher among women who attended clinic (69 % vs. 24%), it is impressive that 31% of women who attended PNC clinic did NOT receive TT during their pregnancy. The administration of TT during PNC clinics would have allowed SC to reach these women.

## *V. Assessment of Changes* in *Knowledge and Practice*

### A. Comparison of Results from Baseline and Final Knowledge and Practice Surveys

### 1. Introduction

The MotherCare Project aimed to increase knowledge levels related to appropriate nutrition and care of pregnant women, mothers and newborns during pregnancy, delivery and the postpartum period. Fathers and mothers-in-law were identified as significant decision makers during an exploratory study, conducted in August 1991, to clarify causes of death and existing patterns of nutrition and care. Thus, the project's information/communication/ education strategies were directed toward husbands and mothers-in-laws, as well as toward pregnant women.

A "Counseling Booklet", consisting of color illustrations and simple text, was developed for use by SC's health outreach workers: female Family Health Visitors (who were later called Family Health Promoters) used portions of the booklet to communicate with pregnant women and their mothers-in-law during home visits; male outreach workers relied on different sections of the booklet in their communications with husbands. Messages included in the counseling booklets emphasize the importance of adequate maternal nutrition during pregnancy and lactation; prenatal care and iron intake; early recognition of and treatment for medical problems associated with pregnancy; use of a trained TBA for delivery; early recognition of and treatment for problems associated with delivery; exclusive breastfeeding during the first four months post partum; and early recognition of and treatment for medical problems in post par-turn mothers and newborns. Before the format of the counseling booklets was finalized, messages were pretested through interviews with mothers. Community support for the household IEC campaign was elicited through "launch" activities that included village leaders and religious leaders.

Other IEC materials include illustrated home-held "reminder" cards and flip charts, with illustrations and captions from the counseling booklet, which are used by CHOs during prenatal care sessions to reinforce messages to pregnant women and mothers-in-law. The project has also produced training materials for a variety of health care providers: "action cards", retained by TBAs, to remind TBAs of steps needed for safe delivery and of danger signs which warrant referral; and manuals for nurse midwives and SC's Community Health Organizers on training TBAs and on field-based case management and/or appropriate referral of complications occurring during pregnancy, delivery or postpartum.

### 2. Methods

To assess whether any changes in levels of knowledge or practice were associated with project interventions, Knowledge and Practice Surveys were conducted just before the initiation of project activities (November/December, 1992) and as part of the final evaluation (April, 1994).

The baseline survey was administered in 1992 to women in the project area who had delivered in September and October, 1992; to their husbands; and to their mothers-in-law. The final survey was administered in February and March, 1994 to women who had delivered in December 1993 and January, 1994; to their husbands; and to their mothers-in-law. The baseline survey captured 91% of the women who had delivered during the specified period (117 out of 129 new mothers); the final survey captured 93% of the women who delivered during the specified period (185 out of 198 new mothers). The difference in numbers of

deliveries during the baseline and final survey periods probably reflects the normal seasonality of births in Bangladesh: in SC's program area (and nationally) more births occur during the November through January quarter than during any other. Women who had delivered in the designated time interval were identified by consulting census-based health rosters maintained by SC's outreach workers. The baseline survey also included 114 husbands and 77 mothers-in-law; the final survey included 176 husbands and 119 mothers-in-law. Questionnaires used for all three groups are included in Appendix 1.

Surveys were administered by graduate students from Dhaka University, almost all of whom had conducted health or socioeconomic surveys for other organizations. Interviewers were trained and supervised by the Bangladesh Field Office Health Program Director.

## 3. Results

Responses given by mothers, husbands and mothers-in-law to selected survey questions are presented in Tables 1, 2 and 3 in Appendix 2; these tables allow us to compare changes between start and end of the project. Table la (also in Appendix 2) presents cross-tabulations of various variables from the mother's final K&P survey.

**4. Analysis of Data from K&P Surveys:**

Chi-square tests were used to assess differences between levels of knowledge and practice at the time of baseline and final surveys. The following tables give results of chi-square tests for those cases in which a significant change had occurred. We realize that when numerous differences are compared, some changes will prove significant by chance alone. Here, however, we see a consistent pattern of increased knowledge and practice.

As usual, chi square values larger than 3.84 indicate that differences are significant at $p=.05$, and values larger than 6.64 indicate significance at $p=.01$.

**a. Tests on changes in mothers' knowledge and practice:**

1. importance of PNC: 81% to 98%; chi square=30.17

| | baseline | final |
|---|---|---|
| important | 95 | 182 |
| not important/ do not know | 22 | 3 |

2. importance of increased food: 87% to 96%; chi square=9.96

| | baseline | final |
|---|---|---|
| need more | 102 | 177 |
| do not need more | 15 | 7 |

3. increased food intake: 29 % to 65 % ; chi square= 38.88

| | baseline | final |
|---|---|---|
| increased | 34 | 120 |
| intake same/less | 83 | 64 |

4. increased daily rice meals: 72 % to 87%; chi square= 11.87

| | baseline | final |
|---|---|---|
| 3-4 meals | 84 | 161 |
| l-2 meals | 33 | 24 |

5. consumed egg/milk lx/week: 45% to 73%; chi square=25.24

| | baseline | final |
|---|---|---|
| consumed | 53 | 135 |
| did not consume | 64 | 49 |

6. know need to increase rest: 65 % to 92%; chi square=36.23

| | baseline | final |
|---|---|---|
| rest important | 76 | 170 |
| not important | 41 | 15 |

7. rested more during pregnancy: 51% to 73 %; chi square= 15.05

| | baseline | final |
|---|---|---|
| rested more | 60 | 135 |
| rested same/less | 56 | 50 |

8. consider Fe important: 71% to 83%; chi square=7.17

| | baseline | final |
|---|---|---|
| important | 83 | 154 |
| not important/ does not know | 34 | 31 |

9. took Fe: 71% to 83%; chi square=7.17

| | baseline | final |
|---|---|---|
| took | 83 | 154 |
| did not take | 34 | 31 |

10. felt better after Fe, among those who took: 82% to 96%; chi square= 15.23

| | baseline | final |
|---|---|---|
| better | 68 | 148 |
| not better | 15 | 6 |

11. used trained TBA: 71% to 75%; chi square=8.61

| | baseline | final |
|---|---|---|
| trained | 70 | 139 |
| untrained/status unknown | 47 | 46 |

12. used soap in delivery: 9% to 85%; chi square=174.7

| | baseline | final |
|---|---|---|
| used soap | 10 | 158 |
| did not use soap | 107 | 27 |

13. used plastic sheet: 9% to 60%; chi square=81.17

| | baseline | final |
|---|---|---|
| used sheet | 10 | 111 |
| did not use | 107 | 74 |

14. boiled blade: 79 % to 94 % : chi square= 15.86

| | baseline | final |
|---|---|---|
| boiled | 92 | 174 |
| did not boil | 21 | 9 |

15. knows fluid intake should increase post par-turn: 62 % to 95 % ; chi square=55.38

| | baseline | final |
|---|---|---|
| increase fluids | 73 | 176 |
| do not increase | 44 | 9 |

16. increased fluid intake: 61% to 84%; chi square=21.56

| | baseline | final |
|---|---|---|
| increased | 71 | 155 |
| did not increase | 45 | 29 |

17. restricted some foods: 64 % to 20 % ; chi square =61.75

| | baseline | final |
|---|---|---|
| restricted | 75 | 36 |
| did not restrict | 40 | 149 |

18. knows Fe is needed: 71% to 96%; chi square=38.72

| | baseline | final |
|---|---|---|
| Fe needed | 83 | 177 |
| not needed | 34 | 8 |

19. took Fe postpartum: 15% to 69%; chi square=85.47

| | baseline | final |
|---|---|---|
| took Fe | 17 | 127 |
| did not take | 99 | 58 |

20. gave infant colostrum: 70% to 92%; chi square=28.00

| | baseline | final |
|---|---|---|
| gave colostrum | 82 | 171 |
| did not give | 35 | 14 |

21. knows importance of exclusive breastfeeding: 73 % to 83 % ; chi square=4.4 1

| | baseline | final |
|---|---|---|
| important | 85 | 153 |
| not important | 31 | 32 |

22. gave nothing other than breastmilk first day: 18% to 37%; chi square= 13.1 I

| | baseline | final |
|---|---|---|
| only breastmilk | 21 | 68 |
| other | 96 | 117 |

23. thought husbands supported PNC: 56% to 89%; chi square=42.81

| | baseline | final |
|---|---|---|
| support PNC | 66 | 164 |
| do not support | 51 | 21 |

24. thought MILs supported PNC: 60% to 86%; chi square= 19.51

| | baseline | final |
|---|---|---|
| support PNC | 49 | 108 |
| do not support | 33 | 18 |

25. thought husbands supported increased food: 66% to 92 %; chi square= 34.5

| | baseline | final |
|---|---|---|
| support more food | 77 | 170 |
| do not support | 40 | 15 |

26. thought MILs supported increased food: 68% to 87%; chi square= 12.76

| | baseline | final |
|---|---|---|
| support more food | 56 | 117 |
| do not support | 26 | 17 |

27. thought husbands supported increased rest: 54% to 84 %; chi square=33.50

| | baseline | final |
|---|---|---|
| support rest | 63 | 155 |
| do not support | 54 | 30 |

28. thought MILs supported increased rest: 52% to 69%; chi square=4.37

| | baseline | final |
|---|---|---|
| support rest | 43 | 92 |
| do not support | 29 | 34 |

29. sought treatment for problems in delivery: 48% to 72%; chi square=3.96

| | baseline | final |
|---|---|---|
| sought treatment | 10 | 18 |
| did not seek | 11 | 7 |

30. increased fluid intake in labor: 38% to 64%; chi square=20.13

| | baseline | final |
|---|---|---|
| increased | 44 | 118 |
| did not increase | 71 | 66 |

31. placed nothing on umbilical stump: 19% to 43%; chi square=20.51

| | baseline | final |
|---|---|---|
| nothing | 22 | 80 |
| something | 91 | 99 |

32. reported “no control” in spacing children: 23% to 12 %; chi square=5.13

| | baseline | final |
|---|---|---|
| no control | 27 | 23 |
| other | 90 | 162 |

**b. Tests on changes in husbands' knowledge and practice:**

I. support for routine PNC: 57% to 65 % ; chi square =40.80

| | baseline | final |
|---|---|---|
| support | 75 | 155 |
| do not support | 32 | 5 |

2. know that food should be increased in pregnancy: 66 % to 92 %; chi square=3 1.84

| | baseline | final |
|---|---|---|
| need to increase | 75 | 161 |
| no need | 39 | 15 |

3. know need for more rest in pregnancy: 44% to 93%; chi square=89.59

| | baseline | final |
|---|---|---|
| more rest needed | 50 | 164 |
| not needed | 64 | 12 |

4. support intake of Fe: 85 % to 94 %; chi square =6.98

| | baseline | final |
|---|---|---|
| support Fe | 97 | 165 |
| do not support | 17 | 11 |

5. select TBA because she is trained: 21% to 40%; chi square= 12.57

| | baseline | final |
|---|---|---|
| trained | 24 | 71 |
| gave other reason | 90 | 105 |

6. know need for exclusive breastfeeding: 39% to 69%; chi square=26.89

| | baseline | final |
|---|---|---|
| exclusive | 44 | 121 |
| other | 70 | 55 |

7. acquired Fe: 36% to 86%; chi square=53.87

| | baseline | final |
|---|---|---|
| acquired | 41 | 151 |
| did not acquire | 52 | 25 |

8. thought there could he "no control" over child spacing: 34% to 6%; chi square=35.97

| | baseline | final |
|---|---|---|
| no control | 39 | 11 |
| other | 75 | 165 |

9. of those who thought births should be spaced more than two years apart, knowledge of modem methods of contraception: 85 % to 97 % ; chi square= 10.06

| | baseline | final |
|---|---|---|
| modem method | 34 | 144 |
| other | 6 | 5 |

**c. Tests on changes in knowledge and practice of mothers-in-law:**

**1. need** for high protein food: 83% to 91%; chi square=4.02

| | baseline | final |
|---|---|---|
| need protein | 64 | 108 |
| do not need | 13 | 10 |

2. need more rest: 57% to 82%; chi square=15.94

| | baseline | final |
|---|---|---|
| more rest needed | 44 | 97 |
| not needed | 32 | 20 |

3. obtained Fe for DIL: 27% to 62%; chi square=23.08

| | baseline | final |
|---|---|---|
| obtained | 21 | 73 |
| did not obtain | 55 | 45 |

**d. Tests on association between PNC and other aspects of care in pregnancy:**

1. Receipt of at least one TT during pregnancy according to whether or not mother attended PNC: chi square = 30.76

| | attended PNC | did not attend |
|---|---|---|
| received TT | 99 | 13 |
| did not receive TT | 44 | 41 |

2. Intake of Fe according to whether or not mother attended PNC: chi square=72.93

| | took Fe | did not take |
|---|---|---|
| did not attend PNC | 12 | 22 |
| attended PNC | 142 | 9 |

## B. Focus Group Discussions

Summarized below are the highlights from each focus group discussion. In reviewing this summary, please keep in mind that the author has relied on translations by two other members of the Evaluation Team (Drs. Najma and Nikhil Roy).

### 1. Mothers who gave birth in the last 6 months:

Eleven mothers attended this session, most carrying their infants.

1. Mothers were able to repeat nutritional and safe delivery messages included in IEC materials with no prompting. They liked the pictorial reminder which SC developed and which they can keep in their own homes.

2. For problems occurring during pregnancy or postpartum, the usual chain of care-seeking is as follows: mothers first seek help from SC clinic personnel; if these personnel are not available, they turn to village doctors; they will go to hospital (Nasimagar) only if referred for a very serious problem. The GOB Family Welfare Visitor stationed in Kunda was not mentioned as a source of care: later on, mothers complained that she was often absent .

   They will take their newborns out of their home only if the newborn has a very serious problem. The following were defined as very serious: ARI, problems with breastfeeding, thrush, and cord infection.

3. The mother of one 6 month old infant who was clearly under-weight and somewhat dehydrated said that she had started feeding her infant cow's milk at three months: the infant had had frequent bouts of diarrhea. Mother was also feeding the infant from a bottle rather than with a spoon. The infant was also still breastfeeding, and mother was advised on safe feeding practices as well as how to increase breastmilk.

### 2. Husbands of mothers who gave birth in the last six months:

Twelve husbands attended this session.

**I.** Husbands were easily able to communicate messages on prenatal care and nutrition, and cited the IEC booklet and health outreach worker as the source of these messages. They were glad that outreach workers were communicating with their wives. They emphasized that mothers should eat more even after delivery: they pointed **out,** however, that meat and fish were expensive and were consumed only rarely. Husbands **had collected** materials **needed** for delivery (at the direction of the mothers) and knew that blade and thread needed boiling. Husbands had often collected Fe for their wives, and knew that Fe was needed for three months before pregnancy and two months after. They supported their wives' attendance at PNC clinic: sometimes they brought them to the clinic themselves, and sometimes their wives were escorted by their mothers (mother-in-law of pregnant woman).

2. Husbands said that there had been a decrease in tetanus deaths over time, and recognized the impact of TT.

3. In case of problems during delivery, husbands said they would agree to what TBAs advised. "Nowadays, TBAs are good: they have training, and we can rely on them."

4. With regard to family planning, husbands first said that two children were enough, even two girls. Later, they said that families should have no more than three children. They mentioned that the GOB FP worker was supposed to visit each home in every one or two month period, but in reality did so every two or three months.

5. With regard to sources of care: Husbands were displeased that SC had discontinued its primary care clinic. Now, they tended to rely more on village doctors, who they considered poorly trained and expensive; in response to the FGD Facilitator's suggestion that SC train the village doctors, they said, "After receiving training, village doctors will have bigger egos and will charge more. But at least with training, they will diagnose properly." They suggested that some income generating activity be undertaken to sustain the PHC clinic, and named the fish pond as a possibility: the facilitator pointed out that they had failed previously to make a success out of the fish pond, and they said, "The problem is that we do not have unity amongst ourselves."

   If newborns or post partum women became ill, they would not hesitate to seek treatment: proscriptions against leaving the home were not important in those cases. They recognized, however, that it would be useless to go to Nasirnagar hospital and expensive to go to Brahmanbaria (especially if the patient had to be carried in a hanging basket): thus, before going to the hospital, they would try to get help from SC.

6. Husbands recognized that SC started "weighing children to see if they are growing well" and said that "previously we thought weighing was a bad practice." It was unclear whether they realized that--as of last fall--growth monitoring is no longer conducted by SC's health outreach workers.

**3. Mothers-in-law of women who gave birth in the last six months**

This session was attended by 11 mothers-in-law.

1. Comments of mothers-in-law reflected a clear understanding of IEC messages, and also a realistic understanding of constraints to changing behaviors:

a. MILs said that "nowadays" they brought their DILs to clinic and EPI sessions, collected Fe for them, and tried to provide "a little more food." Although they recognized that more rest was needed during pregnancy, they said that "this is not always possible in the village; instead, try to do work with the help of others."

b. They understood the connection between increasing levels of TT immunization and decreasing tetanus, or "red and blue disease."

c. Even though they knew that TBAs have safe birth kits, they tried to gather blade, thread, clean (old) cloth and soap in their own homes.

d. They said that only gentian violet--if anything--should be applied to cord. Previously, many different materials had been applied to the cord.

2. They seemed to accept the idea of family planning and said they learned of the option through the IEC booklet ("Dream come true"): "There is no need for more than three children in nine years".

3. With regard to seeking care for maternal post partum or neonatal problems: "There is the custom of not going out after birth, but custom is not that important if mother needs treatment for problems." Treatment was first sought from the SC CHO; if SC staff were

not available, they took mothers or newborns to village doctors: "…but as they are more expensive, we prefer to go to clinic first. " ARI was identified as a serious problem for the newborn, for which treatment would be sought.

4. MILs said that if they understood the health problems of their DILs, they could care for them better. One said, "This is the care I would want for my daughter. Why should I not want it for my daughter-in-law?"

5. With regard to well child care: MILS could identify immunization-preventable diseases and attributed the fall in such diseases to immunization; they knew that the age for measles immunization was nine months. They recognized that SC had stopped its growth monitoring program: "Now a days, there is no weighing. In the past, they used to advise frequent feeding if the child was not growing or had low weight."

**4. Community Leaders**

This session was attended by six community leaders.

1. They said that cooperation with SC had increased their status in the community.

2. They pointed out that SC had discontinued its "hospital" (PHC clinic) and pointed out that "If SC continues to give service to the community, it would be a better way of serving the village people. "

3. They said that services provided by GOB facilities were poor: GOB FP workers are not regularly present in the villages.

4. They pointed out that treatment in hospital was expensive; such expense made it difficult for village people to follow advice on referral.

**5. Traditional Birth Attendants**

This session was attended by twelve TBAs who had conducted between 5-10 deliveries each during the last year.

1. TBAs described procedures for safe delivery and said that now--after SC training--mothers usually had the necessary items ready at home. They mentioned the importance of taking Fe, attending PNC and receiving TT. They knew that putting the newborn to breast could increase the speed of placental delivery and that frequent breastfeeding could increase the supply of breast milk.

2. Malpresentation, edema, seizures and prolonged labor were cited as complications which they would refer, first to SC staff and then to Nasimagar hospital.

3. TBAs said that their status in the community had increased as a result of their training: husbands usually listened to their advice on referral, though MILs sometimes balked at the idea of their DIL being examined by a male doctor. Even in cases of stillbirth, husbands now thanked them for at least trying to deliver the infant.

4. They said that they do not charge for their services. Sometimes they received money, soap or clothing from the families who they had assisted.

**6. Village Doctors (allopathic practitioners with varying levels of formal training)**

The ten village doctors who attended the session had been in practice from 5 to 25 years.

1. They said that the conditions they treated consisted mainly of diarrhea, dysentery, ARI, skin infection, and fever. The facilitator asked them how they treated diarrhea: they said that they prescribed ORS packets or showed mothers how to make home mix; "…but in cases of severe disease, the community prefers IV therapy." Later they said that they used Cotrimoxazole for dysentery.

2. Because in-hospital care is costly, they said that most patients preferred care from the village doctor over care in hospital. They would, however, refer severe cases to the hospital. Generally, they said, GOB services were no good.

3. They said that SC activities had not reduced their practices.

4. They said that they treated poorer patients on credit, making most of their profit from their wealthier patients; they said **that** 50% of their patients were treated on credit. The possibility of offering free care to the poor one day per month was **not** acceptable to them: they said that such free care would exhaust their supplies; they said they could only do this if they were given some supplies at no cost.

5. Only one of the village doctors sold any contraceptive supplies; the others feared that families would get angry.

6. They expressed a desire for more training: "SC has worked in this area so long and has trained TBAs, CHOs and nurse midwives--but the agency has never paid any attention to us." They wanted to know how to differentiate (according to symptoms) presentations of eclampsia, hysteria and tetanus.

7. They say they still give Syntocin "for pushing" during labor (5 u I.V.); they said they were not aware of any problems associated with this practice and claimed not to have seen any deaths related to it.

7. **Community Health Organizers and nurse midwives**

FGDs with CHOs were held in Kunda and Gokama; two staff members were interviewed at each site.

1. Poverty and "religious-mindedness" prevented **many** families from following advice for referral. Still, CHOs referred serious complications to hospital; they cited malpresentation as a condition they would refer.

2. They said that they wanted more training but did not specify in what.

## C. Discussion: Changes in Levels of Knowledge and Practice Based on K&P Survey and Focus Group Discussions

Both K&P survey results and focus group discussions show clear and significant increases in levels of knowledge on the part of mothers, husbands, and mothers-in-law. All groups are more aware and supportive of behavioral changes

1. that can improve the health of women during pregnancy: e.g., attendance at PNC, increase in food consumption, intake of iron tablets, and increased rest; and

2. that can improve the health of mothers and newborns post partum: e.g., increased maternal fluid intake, avoiding food restrictions, intake of Fe, feeding colostrum, exclusive breastfeeding through the first four months after birth, and controlling fertility through modem contraception.

There was also a significant increase during the course of the project in mothers' perception of support from other family members (husbands, mothers-in-law) for protective health behaviors.

It should be noted, however, that levels of knowledge about protective behaviors were--with respect to most issues--not extremely low at the start of the project. The important question thus becomes, "How well were increased levels of knowledge and perception of support translated into increased practice?"

The K&P survey did show significant increases in certain protective practices:

### *I. intake of iron tablets during and after pregnancy:*

Perhaps the clearest improvement concerned the intake of iron; by the end of the project, high proportions of mothers reported taking Fe (and feeling better after doing so!), and high proportions of husbands and mothers-in-law reported that they helped obtain Fe.

### *2. improved nutrition during pregnancy and lacration, and breastfeeding practices:*

By the end of the project, a higher proportion of mothers reported that they ate more during pregnancy; there were increases in daily consumption of rice meals and weekly consumption of milk or eggs. However, the proportion of husbands and mothers-in-law who reported that they tried to obtain "special foods" for pregnant women did not increase significantly.

There was a significant increase in the proportion of mothers who fed their infants colostrum and **who** gave only breastmilk on the first day. When we considered proportions of mothers who were still breastfeeding exclusively at the time the survey questionnaire was administered, however, there was no change from levels at the start of the survey--even though a significantly higher proportion of mothers recognized the value of exclusive breastfeeding. This may reflect mothers' continued perception that their breastmilk is insufficient.

### *3. attendance at PNC sessions*

Based on K&P survey results, we cannot claim that the proportion of women who attended two or more prenatal care sessions had increased significantly by the end of the project. Review of PNC registers, however, did reveal an increase in level of attendance.

This is encouraging, as cross-tabulation of results from the final K&P survey showed that women who attended PNC were more likely to take Fe and to receive TT during pregnancy.

***4. increased rest during pregnancy***

A higher proportion of mothers reported that they rested during pregnancy. In FGDs, however, mothers-in-law pointed out how difficult it was to find time to rest in the village.

***5. increased use of trained TBAs and practice of hygienic delivery techniques***

Given SC's TBA training activities, it was no surprise that by the end of the project a higher proportion of mothers were using trained TBAs. A higher proportion of husbands (but not mothers or mothers-in-law!) cited training as the reason for TBA selection. By the end of the project, significantly higher proportions of mothers reported that they had used soap and plastic sheets during delivery, and had boiled blades; fewer mothers were placing anything on the umbilical stump.

***6. perception of problems during pregnancy and delivery, and willingness to seek treatment***

It was difficult to assess from these survey results changes in ability to identify potentially serious problems during pregnancy or willingness to seek treatment for problems: mothers reported that they ignored many problems in pregnancy because they thought they were "not serious"; not all problems which mothers and other family members identified as serious were necessarily specific to pregnancy. During FGDs, however, all groups were able to name problems which were more likely to occur during pregnancy, and which warranted referral; likewise, they were able to cite complications during delivery for which they would seek advanced care.

According to the K&P survey, there was no change in the proportion of women who sought treatment for problems experienced during pregnancy. There was a significant increase, however, in the proportion of women who sought treatment for complications during delivery. The most common problem identified during delivery was prolonged or delayed labor; "fever" was the most common problem reported in the post partum period; and symptoms of AR1 were the most commonly reported problem of the newborn.

FGDs and K&P surveys indicated that for problems in pregnancy or delivery, women and their families would begin by seeking care from local providers (SC personnel, who were more likely to be consulted for problems in pregnancy, and village doctors, who were more likely to be consulted for problems in delivery); only if these local providers were unavailable or unable to help would they go to hospital. FGDs suggested that the TBA training program had improved the status of TBAs to the point where their advice on the need for more advanced care was generally heeded: even after TBAs advised referral, however, families would try to obtain help from NMWs or village doctors. Focus groups expressed dissatisfaction with some government providers, complaining that these providers were not present at their posts at scheduled times.

The most common reason given by mothers for not seeking treatment for a problem occurring during pregnancy was their perception that the problem was not serious. Next, they cited lack of money. Financial constraints limit the extent to which mothers and families can turn to village doctors for help: even though village doctors claimed to treat the poorest members of the community on credit, mothers-in-law and husbands said that their care was expensive. While training village doctors may not greatly increase access to treatment for complications, it should certainly be undertaken in order to improve the quality of their

practice: their administration of syntocin to women in labor is just one of many practices that may adversely affect the health of mothers and infants.

The ability of nurse midwives and CHOs to manage cases in the field is severely limited by SC's proscription against the use of injectable antibiotics or IV drugs or fluid replacement: even though nurse midwife case management protocols clearly require these capabilities, nurse midwives and CHOs have been instructed to refer women and newborns requiring such treatment to hospital, or to government FHVs or village doctors if hospital transfer is not immediately possible or is refused. SC BFO staff believe that if the agency were to offer such treatment, it would increase community reliance on a source of care that will not be sustained after the end of the CS8 project and might increase the agency's liability for any mishaps.

Given this philosophy, it is imperative that agency personnel improve the case management abilities of local government and non-government providers and strengthen logistics to ensure that government providers have access to adequate supplies. SC can establish channels for communication between village leaders and thana-level administrators: dialogue on family planning issues with thana-level administrators has already been initiated; such dialogue should be broadened to include issues related to emergency obstetric treatment and other aspects of reproductive health.

*VI. Analysis of Postnatal Questionnaires*

## A. Introduction

Several MotherCare Project activities were designed to train families and health care providers to recognize potentially dangerous problems during pregnancy, delivery and the postpartum period and to seek help for such problems from appropriate sources in a timely way. Health care providers who were targetted for training included traditional birth attendants (TBAs), and Save the Children health staff (Community Health Organizers and nurse midwives). The postnatal questionnaire was developed as a management tool--to identify TBAs and other providers whose practices were unsatisfactory and to offer them further training--as well as a tool for evaluation of project impact on management of complications and consequent morbidity and mortality.

## B. Methods

The postnatal questionnaire (included in Appendix 3) was administered to all mothers who had delivered (or to a family member, in case of maternal death) within two weeks after delivery; the number of infant deaths captured through these questionnaires cannot, therefore, be used to calculate infant mortality. Questionnaires were administered by CHOs.

This study is based upon responses in the 197 questionnaires administered in December, 1993 and January, 1994. The group of women represented by these questionnaires, therefore, is almost the same as the group which participated in the final K&P survey.

Data were analyzed using SPSS.

Because of staff turnover (especially in Gokama), the BFO MotherCare Project Principal Investigator thought that the quality of information collected in the postnatal questionnaires was probably inferior to that in the K&P survey.

## C. Results

1. GENERAL DESCRIPTIVE INFORMATION

total respondants: 197

***Birth outcome:***

There is some discrepency between the number of stillbirths and neonatal deaths recorded in birth registers for December 1993 and January 1994 and the number of stillbirths and neonatal deaths captured in the postnatal questionnaires--granted even that we would not expect to capture all neonatal deaths which occurred during this period in the postnatal questionnaires because tney were administered just two weeks after birth. Part of this error arises from the loss of three questionnaires which had been sent back to the field from Dhaka for verification of information. Also, the death of one newborn, recorded in the postnatal questionnaire, was not captured in the death register; reasons for this failure to record a neonatal death are being investigated. During their field visit, members of the FET tried to clarify the nature of the discrepency between stillbirths and neonatal deaths recorded in death registers and postnatal questionnaires by creating the following table:

| village | neonatal deaths which occurred within 2 weeks after birth and should have been included in PNQs (according to register) | neonatal deaths which were included in PNQs | still-births which should have been included in PNQ (in register) | still-births which were in PNQ |
|---|---|---|---|---|
| Kunda | 4 | 2 | 2 | 0 |
| Moslendapur | 0 | 0 | 1 | 0 |
| Gokama | 0 | | 0 | |
| Chairkury | 0 | | 0 | |
| Nurpur | 1 | 2 | 2 | 2 |

Case descriptions for all the neonatal deaths and stillbirths recorded in postnatal questionaires are included in Appendix 4.

Of the 191 live born infants, 46.6% were female. There were no maternal deaths during this period.

***Size and gestational age of infant:*** Respondants thought that 96.5 % (190) of infants were of normal size at birth; 2.5% (5) were small; and 1.0% (2) were large. 97.5% of infants were full term and 2.5% were pre-term.

***Parity:*** 39.0% of infants were the products of first or second pregnancies, 30.5% of third or fourth pregnancies, 16.8% of fifth or sixth pregnancies, and 13.7% of sixth or higher order pregnancies.

***Maternal age:*** 9.6% of mothers were younger than 20 years; 41.6% were 20-25 years; 29.9% were 26-30 years; 14.3 % were 31-35 years; 3.6% were older than 35 years; and 1% were of unknown age.

Place of delivery: 89.3% of infants were born in the project area and 10.7% outside. 82.7% of infants were born at the home of the husband's family; 16.8% at the home of the mother's parents; and .5% elsewhere.

2. PRENATAL CARE

***Attendance at ANC:*** 46.7% of the mothers had attended ANC two or more times during their pregnancy; 25.9% one time; and 27.4% had not attended. Of those who attended one or more. times, 81.4% initiate3 care in the second trimester; 16.4% in the third trimester; and for 2.2%, time of PNC initiation was unknown.

***Immunization*** *for tetanus:* 10.2% of mothers had never received TT; 3.0% had one TT; 22.3% had two TTs; and 64.5% had more than two TTs.

***Problems during pregnancy:*** 10.2% of mothers (20) reported that they had experienced some problem during pregnancy; 89.8% reported no problem. All mothers who reported a problem had sought treatment: 75% went to the SC PNC clinic and 25% sought treatment from some other source. The 20 mothers who had experienced problems reported a total of 36 problems, as follow:

lower abdominal pain--38.9% (of problems)
fever--8.3 %
mouth sores--5.6 %
dysentery--8.3%
excessive vomiting--5.6 %
lower back pain--13.9%
epigastic pain/burning--8.3 %
leg pain--8.3 %
insomnia--2.8 %

All of these problems were treated, either by SC health personel or by some other providers: 83.3% of all problems (as opposed to women) were treated by SC staff and 16.7% by other providers.

## 3. DELIVERY AND TBA PERFORMANCE

***Frequency of complications in delivery:*** 91.9% of mothers (180) reported no problems during delivery; 8.1% (16) reported some problem. The 16 mothers who reported problems cited a total of 22 complications, as follow:

delayed delivery--41 .O %
PROM--22.7 %
malpresentation-- 18.2 %
antepartum hemorrhage--4.5 %
delayed delivery of placenta--13.6 %

***Management of problems in delivery:*** Eight of the 16 women who reported complications during delivery were treated for those complications; eight were not treated. Of those who reported "treatment": 5 were referred by TBAs to hospital; one called an SC worker, who referred her to hospital; and two called the village doctor, who managed the complication on site. Of the six mothers referred to hospital, two went; in one case, the TBA brought the FWV from the hospital to the mother's home.

***Reasons for lack of treatment ofproblems in delivery:*** Of the eight mothers who experienced problems in delivery but did not report "treatment" for those problems, five thought that the problem was not serious enough to warrant treatment; two reported lack of assistance (their husbands were away) as an obstacle; one cited religious beliefs as an obstacle; and one cited lack of money.

***Training of TBA***: Of the 176 deliveries which occurred in the project area, 69.3% were managed by recently trained TBAs and 30.7% by untrained TBAs.

***Management of routine delivery by trained vs. untrained TBAs:***

Since the TBA training course focused on hygienic management of normal delivery as well as recognition of complications, the following analysis was conducted to see whether trained TBAs performed differently from untrained TBAs. Chi square values are included in cases where practice of trained TBAs differs significantly from practices of untrained TBAs. Here, the "trained" category includes completely and partly trained TBAs.

| | trained | untrained | total |
|---|---|---|---|
| used kit box | 75 (62%) | 11 (20%) | 86 |
| did **not** use kit box | 47 | 43 | 90 |
| total | 122 | 54 | 176 |

chi square=23.69

| | trained | untrained | total |
|---|---|---|---|
| used plastic sheet | 88 (72%) | 26 (48%) | 114 |
| did nbt use plastic sheet | 3 4 | 28 | 62 |
| total | 122 | 54 | 176 |

chi square=8.41

| | trained | untrained | total |
|---|---|---|---|
| washed with soap and water | 115 (94%) | 43 (79%) | 158 |
| did not wash | 7 | 11 | 18 |
| total | 122 | 54 | 176 |

chi square=7.20

| | trained | untrained | total |
|---|---|---|---|
| **massage** oil in birth canal | 88 (72%) | 37 (69%) | 125 |
| did not massage oil | 34 | 17 | 51 |
| total | 122 | 54 | 176 |

| | trained | untrained | total |
|---|---|---|---|
| used **holy** water | 23 (19%) | 12 (22%) | 35 |
| did not use holy water | 99 | 42 | 141 |
| total | 122 | 54 | 176 |

| | trained | untrained | total |
|---|---|---|---|
| hypothermia prevented | 86 (70%) | 14 (26%) | 100 |
| hypothermia not prevented | 36 | 40 | 76 |
| total | 122 | 54 | 176 |

chi square=28.51

| | trained | untrained | total |
|---|---|---|---|
| **new** blade used to cut cord | 120 (98%) | 51 (94%) | 171 |
| other cutting implement | 2 | 3 | 5 |
| total | 122 | 54 | 176 |

| | trained | untrained | total |
|---|---|---|---|
| boiling of cutting tool | 119 (98%) | 47 (87%) | 166 |
| no boiling | 3 | 7 | 10 |
| total | 122 | 54 | 176 |

chi square=5.87

| | trained | untrained | total |
|---|---|---|---|
| nothing applied to cord | 99 (81%) | 37 (69%) | 136 |
| Gentian violet applied to cord | 5 ( 4%) | 2 ( 4%) | 7 |
| other **material** applied to cord | 13 (11%) | 10 (190%) | 23 |
| unknown | 5 | 5 | 10 |
| total | 122 | 54 | 176 |

***TBA's advice on post partum care:***

| | trained | untrained | total |
|---|---|---|---|
| advised to eat more | 117 (96%) | 40 (74%) | 157 |
| did not advise to eat more | 5 | 14 | 19 |
| total | 122 | 54 | 176 |

chi square= 16.32

| | trained | untrained | total |
|---|---|---|---|
| advised to drink more | 19 (16%) | 4 (7%) | 23 |
| did not advise to drink more | 103 | 50 | 153 |
| total | 122 | 54 | 176 |

| | trained | untrained | total |
|---|---|---|---|
| advised to restict some foods | 2 (2%) | 2 (4%) | 4 |
| did not advise food restriction | 120 | 52 | 172 |
| total | 122 | 54 | 176 |

| | trained | untrained | total |
|---|---|---|---|
| advised to take iron | 45 (37%) | 13 (24%) | 58 |
| did not advise to take iron | 77 | 41 | 118 |
| total | 122 | 54 | 176 |

| | trained | untrained | total |
|---|---|---|---|
| advised to feed colostrum | 110 (90%) | 35 (65%) | 145 |
| did not advise to feed colostrum | 12 | 19 | 31 |
| total | 122 | 54 | 176 |

chi square= 14.87

| | trained | untrained | total |
|---|---|---|---|
| advised exclusive breastfeeding | 59 (48%) | 24 (44%) | 83 |
| did not so advise | 63 | 30 | 93 |
| total | 122 | 54 | 176 |

| | trained | untrained | total |
|---|---|---|---|
| advised to seek help for problems | 55 (45%) | 5 (9%) | 60 |
| did not so advise | 67 | 49 | 116 |
| total | 122 | 54 | 176 |

chi square= 19.81

| | trained | untrained | total |
|---|---|---|---|
| counselled on family planning | 32 (26%) | 1 (2%) | 33 |
| did not counsel | 90 | 53 | 143 |
| total | 122 | 54 | 176 |

chi square= 13.04

4. MOTHER'S CONDITION POST PARTUM

***Frequency of complications postpartum:*** 93.4 % of mothers (184) reported that they had no complications post partum; 6.6% (13) reported that they had some complication. The 13 mothers who experienced some problem post partum mentioned a total of 16 problems, as follow:

fever--37.5 % (of problems)
bleeding--6.3 %
lower abdominal pain--25.0 %
others--3 1.3 %

The possible association between maternal post partum complications and TBA training (or various TBA activities) was explored through the following cross tabulations:

| | untrained | trained | total |
|---|---|---|---|
| post partum problem | 3 (4%) | 10 (8%) | 13 |
| no problem | 70 | 114 | 184 |
| total | 73 | 124 | 197 |

| | washed hands | did not wash | total |
|---|---|---|---|
| post par-turn problem | 12 (7%) | 1 (6%) | 13 |
| no problem | 162 | 17 | 179 |
| | 174 | 18 | 192 |

| | boiled | did not boil | total |
|---|---|---|---|
| post partum problem | 12 (7%) | 0 (0) | 12 |
| no problem | 172 | 7 | 179 |
| | 184 | 7 | 191 |

| | | | |
|---|---|---|---|
| post pat-turn problem | 55(10%) | 7 (5%) | 13 |
| no problem | 61 | 129 | 184 |
| | | 136 | 197 |

In no case was there an association between a specific TBA practice and the occurrence of a problem post partum.

***Management of complications post panum:*** Three of the 13 mothers whc reported a problem did not seek treatment; 3 called a TBA; 5 consulted an SC worker; and three consulted the village doctor. Of the ten mothers who were treated, six were treated by an SC worker, three by the village doctor, and one in hospital

Reasons for not seeking treatment: Of the three mothers who did not seek treatment for their problems, one felt the problem was not serious; one had no one to help her at home; and one had no money.

Food/fluid intake: 22.3% of mothers reported that they were eating more since delivery; 1.5 % were eating less; and 75.7% were eating the same amount after delivery as before. 16.8% of mothers reported that they were drinking more since delivery; 2.5 % were drinking less; and 79.2% were drinking the same amount after delivery as before.

5. INFANT'S CONDITION (applies only to livebom infants)

*colostrum*: 90.6% of infants had received colostrum.

***exclusive breastfeeding:*** 62.3% of infants had received only breastmilk since delivery; 37.7% had also received some other type of fluid or food.

***neonatal problems:*** 84.8 % of mothers of live born infants (162 mothers) reported that their newborns had experienced no problems since delivery, and 15.2% (29 mothers) reported some type of infant problem. The 29 mothers who reported that their infants had problems mentioned a total of 35 problems, as follow:

poor suckling/weak--17.2% (of problems)
skin infection--14.3%
thrush--5.7%
cord infection--l 1.4
cough/cold--3 1.4
others--20.0

The association between neonatal problems and TBA training or some specific activities surrounding delivery is explored in the following tables. Chi square values are given in cases where there appears to be a significant association.

| | not trained | trained | total |
|---|---|---|---|
| neonatal problem | 16 (22%) | 13 (10%) | 29 |
| no problem | 57 | 111 | 168 |
| total | 73 | 124 | 197 |

chi square=3.91

| | washed hands | didn't wash | total |
|---|---|---|---|
| neonatal problem | 26 (15%) | 3 (17%) | 29 |
| no problem | 148 | 15 | 163 |
| | 174 | 18 | 192 |

| | boiled | did not boil | total |
|---|---|---|---|
| neonatal problem | 28 (15%) | 1 (14%) | 29 |
| no problem | 156 | 6 | 162 |
| | 184 | 7 | 191 |

| | nothing/ Gentian Violet to cord | other to cord | total |
|---|---|---|---|
| neonatal problem | 20 (13%) | 7 (29%) | 27 |
| no problem | 140 | 17 | 157 |
| | 160 | 24 | 184 |

chi square=6.05

The association between infant problems and breastfeeding practices and maternal TT immunization is explored in the tables below:

| | exclusive breastfeeding | supplemental feeding | total |
|---|---|---|---|
| no problem | 115 | 53 | 168 |
| neonatal problem | 10 (8%) | 19 (26%) | 29 |
| | 125 | 72 | 197 |

chi square= 10.88

(One case of thrush occurred in an exclusively breastfed infant and the other in an infant who received supplements.)

| | OTT | >/= 1 TT | total |
|---|---|---|---|
| problem | 14 (17%) | 15 (13%) | 29 |
| no problem | 71 | 97 | 168 |
| total | 85 | 112 | 197 |

| | <2 TT | >/= 2 TT | total |
|---|---|---|---|
| problem | 3 (12%) | 26 (15%) | 29 |
| no problem | 23 | 145 | 168 |
| total | 26 | 171 | 197 |

***Management ofproblems:*** Eight of the 29 mothers who reported a problem in their newborn did not obtain treatment for that problem. Information about the course of action taken by six of the mothers was missing. Of the 15 mothers who were known to seek treatment, 4 sought help from a TBA; 8 from an SC worker; 5 from a village doctor; and 1 took her infant to the hospital.

### *D. Discussion of Results from Postnatal Questionnaires*

### 1. Comparison to K&P Survey

Compared to results of the final K&P survey, postnatal questionnaires showed a lower level of attendance at PNC clinic; a lower incidence of problems in pregnancy and delivery; a higher proportion of problems during pregnancy being treated by SC staff; and a lower proportion of problems in delivery being treated at all. Because the postnatal questionnaires were administered within two weeks postpartum, we would have expected that more problems during pregnancy and delivery would have been reported than were reported through the K&P survey. Lack of previous program experience on the part of SC staff who administered the postnatal questionnaires, especially in the Gokama area, may have affected the quality of data collected.

### 2. Implications for Case Management

We compare practices between trained and untrained TBAs and explore the association between TBA training/practice and maternal and neonatal problems, again remembering that when a large number of statistical tests are done, some are likely to show a significant difference by chance alone.

### 3. TBA Practice and Care of Newborns

With regard to most hygienic precautions, the practice of trained TBAs was significantly better than that of untrained TBAs. Although trained TBAs were somewhat more likely to apply nothing (aside from Gentian Violet) to the umbilical stump, the difference between trained and untrained TBAs with respect to this behavior was not significant: it is important to strengthen TBA training in this area, as results showed a significant association between application of materials (other than GV) to the cord stump and the incidence of neonatal problems. Likewise, trained and untrained TBAs were equally likely to apply oil to the birth canal--hence another area for strengthened training.

There was no association between delivery by a trained TBA and incidence of maternal problems post partum. Infants who were delivered by trained TBAs, however, were significantly less likely to show neonatal complications than those who were delivered by untrained TBAs.

Infants who had been exclusively breastfed for the first two weeks of life were significantly less likely to have problems than those who received other foods as well as breastmilk.

### 4. Management of Complications

Proportionately more problems which occurred during pregnancy were treated than problems which occurred during delivery, mostly by SC staff.

In both the postnatal questionnaires and in the K&P survey, prolonged labor accounted for most complications cited during delivery. In the postnatal questionnaires, women who experienced problems during delivery but who failed to follow advice for referral gave as their reasons lack of help at home (i.e., absence of husband), belief that the problem was not serious, and religious convictions, as well as lack of money.

Fever and lower abdominal pain accounted for most maternal post par-turn problems, and ARI for most neonatal problems. SC staff and village doctors were consulted for most of these problems, again emphasizing the need for improved field-based case management.

It proved to be impossible for FET members to compare the management of prenatal, post partum and neonatal problems as reported in the postnatal questionnaires to management reported in the records of CHOs and nurse midwives: many of the problems described by mothers on the postnatal questionnaires were never presented at clinic or differed from those reported on Annotated Prescription Forms.

In an attempt to assess clinic based case management, the FET did systematically review Annotated Prescription forms which had been filled out by CHOs in Kunda and Gokama during the months of May and December, 1993; (a copy of this form is included in Appendix 5.) One matter of concern is the use of oral Ampicillin drops to treat AR1 in neonates: review of death registers showed that no newborns treated in this manner had died, but it is important for the BFO health staff to follow WHO protocols for AR1 treatment; if there is a departure from these protocols, it should only be with the advice of infectious disease experts and with the understanding that neonates NOT treated with injectable antibiotics will truly receive very close follow up. Likewise, BFO health staff should observe CHO case management first hand, in order to train CHOs to avoid inappropriate use of antibiotics.

# APPENDIX 1

## Questionnaires used for Mothers, Husbands and Mothers-in-Law in Knowledge and Practice Survey